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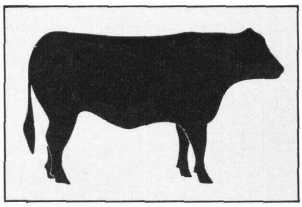
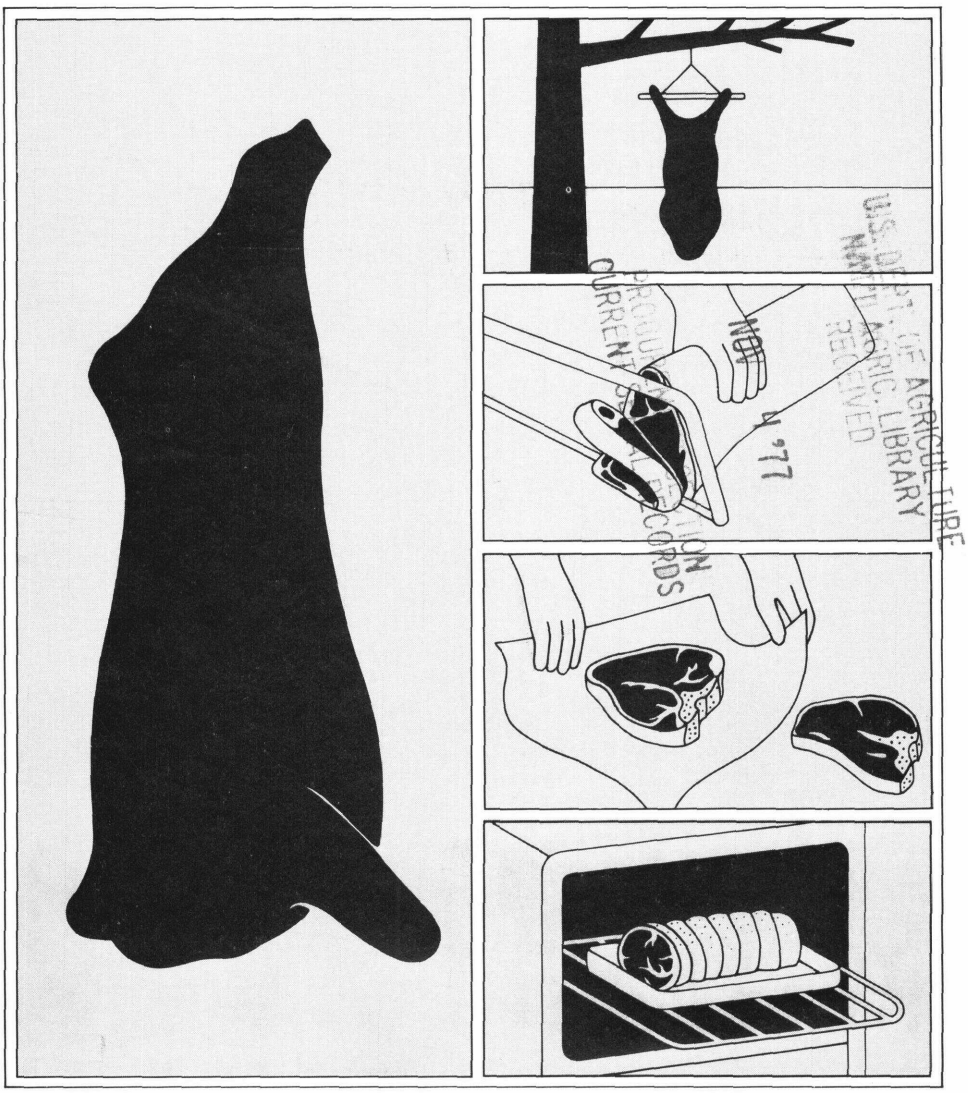
BEEF

Slaughtering, Cutting, Preserving, and Cooking on the Farm





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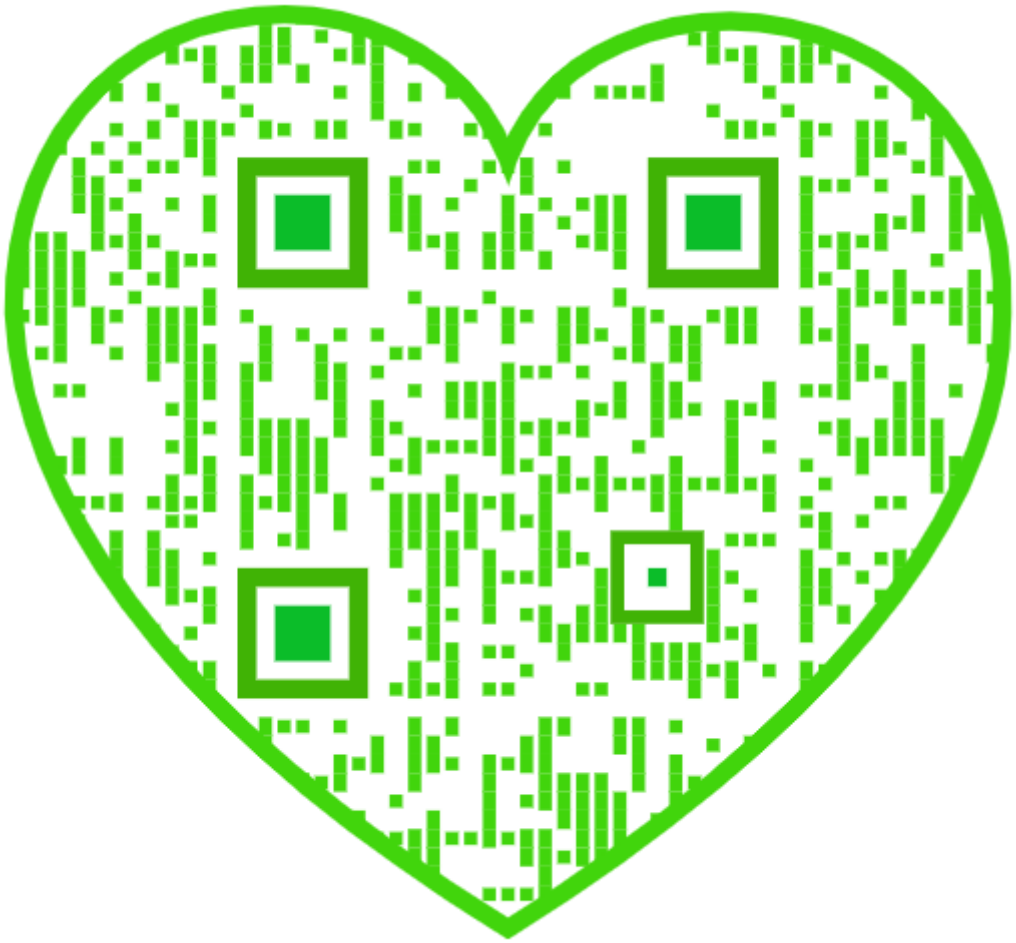

PRECAUTION

The Federal Meat Inspection Act requires that all meat which is to be sold or traded for human consumption must be slaughtered under inspection in an approved facility under the supervision of a State or USDA meat inspector. A person can slaughter his animals outside such a facility only for use by himself, members of his household, and his nonpaying guests and employees. He is not allowed to sell any portion of the carcass. For more details about these regulations, consult your county extension agent or write to the Animal and Plant Health Inspection Service, United States Department of Agriculture, Washington, D.C. 20250.

CONTENTS

	Page
Selection and care of animal before slaughter	1
Preparing for slaughter	2
Slaughter	6
Chilling the carcass	35
Cutting the carcass	38
Freezing and frozen storage	59
Further processing	59
Meat cookery	65

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BEEF SLAUGHTERING, CUTTING, PRESERVING, AND COOKING ON THE FARM

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SELECTION AND CARE OF ANIMAL BEFORE SLAUGHTER

Several factors should be considered before slaughtering a beef animal for home consumption. The most important considerations are health, kind of animal (calf, steer, or heifer or cow), expected meat yield, and care of the animal prior to slaughter.

Health

One should take care that an unhealthy animal is not selected for slaughter. At the time of selection, look for signs of sickness such as fever, increased breathing rate, and diarrhea. Animals suspected of being unhealthy should be treated by a veterinarian until the animal is returned to a healthy state.

Animal Care

To obtain high-quality meat, it is important to exercise proper care of the animal prior to slaughter. Pen the animal in a clean, dry place the day before slaughtering. Restrict the animal from feed 24 hours prior to slaughter, but provide access to water at all times. The slaughter of hot, excited animals increases the risk of sickness, injury, and dark meat.

Animal Type

The kind of animal one selects for slaughter will depend on its ultimate use. For meat similar to U.S. Choice in palatability it is necessary to select a 1,000- to 1,200-pound steer or a 900- to 1,000-pound heifer that has been on full feed for at least 150 days. The time on feed influences palatability because of the fat content

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in the lean. Unfortunately, as most animals deposit fat in the muscle, they also deposit fat around the muscle. Much of the outside fat is usually trimmed off during cutting. If meat with less waste fat is desired, a steer or heifer fed on forage to 800 to 900 pounds will be suitable. If the animal's age is less than 17 to 18 months, the properly prepared cooked meat should be relatively tender. Yearlings just off the cow with perhaps a short period on grass, weighing 400 to 600 pounds, will produce meat low in fat. This meat will be less flavorful than meat from grain-fed animals but should be acceptably tender. Many persons who slaughter on the farm expect the meat from an 800-pound forage-fed steer to taste like U.S. Choice or Prime.

Meat Yield

Well-fed steers from most beef breeds yield a dressed carcass weighing approximately 60 percent of the animal's live weight. For example, a 1,000-pound live steer yields a 600-pound carcass. Yields will vary according to the feeding ration and the length of time on feed. Cutting losses from the carcass, such as bone or fat trim, vary from 20 to 30 percent or more. With a 25-percent cutting loss, which is not unusual, a 600-pound carcass would yield approximately 450 pounds of usable meat cuts. A good rule of thumb for carcass beef is 25 percent waste, 25 percent ground beef and stew meat, 25 percent steaks, and 25 percent roasts. Thus a 1,000-pound steer will, on the average, yield about 450 pounds of usable meat cuts. This figure can easily be as high as 550 pounds for an animal with very little waste fat to as low as 300 pounds for an animal with excessive waste fat.

PREPARING FOR SLAUGHTER

Prior to the day of slaughter, select the slaughter site, accumulate all equipment, prepare for waste disposal, and, if necessary, make arrangements with a local processor or meat market for chilling and cutting the carcass. If you plan to have the carcass chilled and cut up, arrangements should be made concerning the time and day on which the carcass can be accepted, the charges, and specific instructions for chilling, cutting, and wrapping the carcass.

Site Selection

Selection of the slaughter site is extremely important. A site with clean, running water is best. If a tree is to be used, a healthy limb 6 to 8 inches in diameter and 12 to 15 feet from the ground is needed. This will ensure that the limb will not break from the weight of the carcass and the carcass can be fully extended from the ground for viscera removal and splitting. If slaughter is to be done in a barn, be sure that a strong beam 12 to 15 feet from the floor is available. The floor

should be clean and, preferably, concrete.

After selection of the slaughter site, clean up the area to ensure that leaves and dirt are not blown on the carcass during slaughter. If the site has a wooden or concrete floor, wash the floor and all equipment with plenty of soap and water. Be sure to rinse thoroughly because sanitizers discolor the meat and may cause off-flavors. If slaughtering is to be done outdoors use straw to cover the area where the carcass will be skinned and eviscerated.

The weather on the day of slaughter should also be considered. During hot weather, slaughter is best performed during the early morning or late evening hours. Since an inexperienced person will take 2 to 3 hours to complete the slaughter operation, care should be taken to preclude long exposure to high temperatures. During cold weather of less than 35°F, slaughter can be done at any time, since spoilage bacteria do not grow as rapidly in a cold environment. Slaughter during high winds will result in dirt and other contaminants being blown onto the carcass.

Waste Disposal

All waste products should be disposed of in a sanitary manner. If the work is to be done in the open, one should select a site with good drainage so that blood and water can drain away from the carcass. Blood and water must not be allowed to pollute nearby streams or other water supplies.

Disposal of viscera is often a problem. Arrangements should be made to have a local processor or rendering plant pick it up. If this is not possible, it should be buried so that dogs and other animals cannot dig it up.

The hide is a very important byproduct of cattle and represents about 7 percent of the live weight. After removal, spread it out in a cool place with the hair side down and give it a good application of ice cream or sack salt. About 1 pound of salt is required per pound of hide. The hide may be tanned or sold.

Slaughter Equipment

Elaborate and expensive equipment is not necessary, but certain items are essential (fig. 1). The following slaughter equipment is recommended:

1. .22-caliber rifle with long cartridges or long rifle cartridges.
2. Sharp skinning knife and and steel (see the section on sharpening knives).
3. Block and tackle or chain hoist—should have at least a 3/4- or 1-inch nylon rope or chain.
4. Chocks — concrete blocks work well.
5. Meat saw.
6. Oil or water stone.
7. Ample cold water for washing hands, equipment, carcass, and byproducts.
8. Tree with strong limb, beam, or tripod 12 to 15 feet high, or tractor with hydraulic lift.

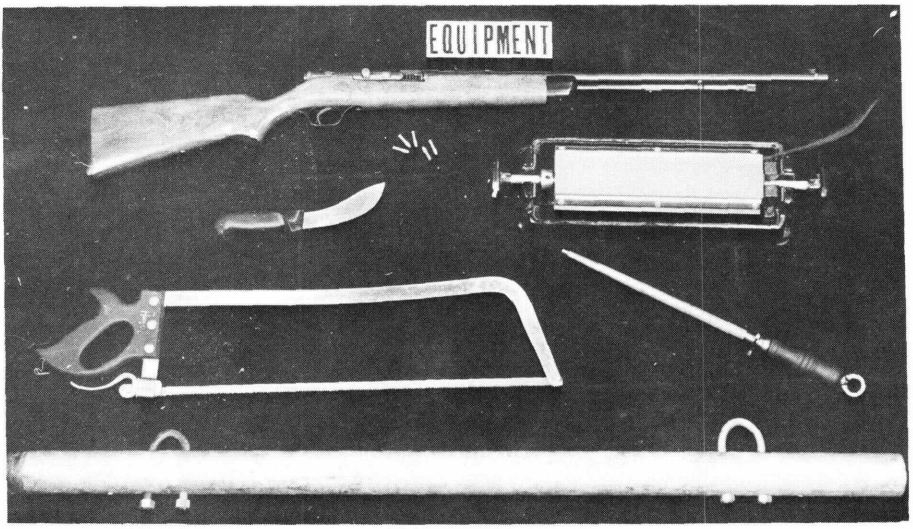

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Figure 1.—Equipment for slaughter.

9. Beef spreader or singletree (for 400- to 600-pound animal, 36 inches long; for heavy cattle, 40 inches long).

10. Buckets (two or three).

11. Ice or cold water.

12. Straw for placing under animal during skinning and evisceration.

13. Clean cloths or plastic for protection of meat during transport.

14. Clean string.

Be sure that all equipment that will come in contact with meat is thoroughly cleaned. Most people get blood and other material on their outer garments during slaughter, which should not be transferred to the carcass after it is washed.

Additional equipment needed for cutting the carcass is discussed in the section on carcass cutting.

The Correct Procedure for Sharpening Knives

The basic operations involved in sharpening a knife are grinding, honing, and steeling. Maintenance of a sharp working edge often requires only steeling. If the knife is in heavy use, periodic honing is usually required daily or at least weekly.

1. Grinding (fig. 2) is necessary because new knives are not usually sold in a form sharp enough for immediate use. The stone should be water, or oil-cooled to avoid overheating the knife. The blade should not be ground back more than ¼ inch from the edge to form the proper bevel. The bevel should be the same on both sides of a skinning knife so that it may be used with either hand in removing the hide from a beef carcass. It is best to

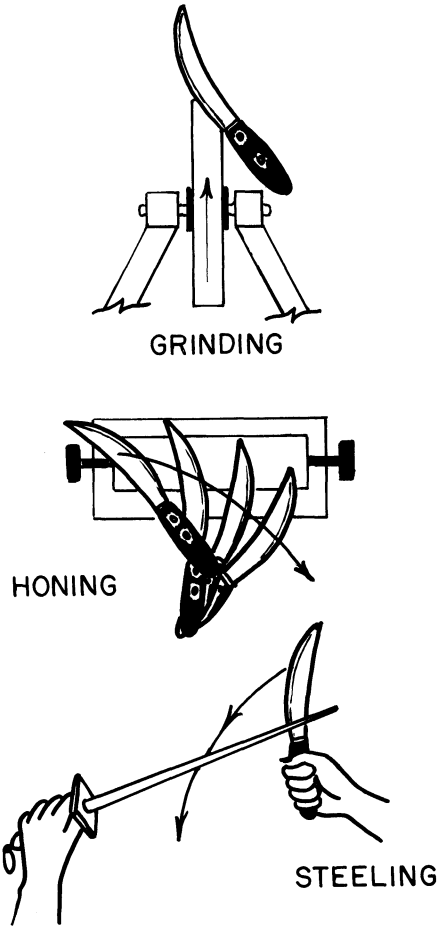

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Figure 2.—The correct procedure for sharpening knives.[6]

grind the knife by holding the knife edge against the stone at a right angle to prevent scarring the blade any farther back than the actual bevel.

2. **Honing** (fig. 2) is accomplished on a carborundum stone. Stones should be set in a block of wood or placed on a damp cloth to prevent lateral sliding. Hold the handle of the knife in the right hand with the blade edge pointed away from your body. Assume a position parallel to the side of the stone and place the heel of the knife blade on the end of the stone to your extreme left. Tilt the blade of the knife enough to make the bevel lie flat with the stone. Place the finger tips of the left hand on the flat of the blade toward the tip and near the back edge to exert pressure on the blade. It is very important for safety that the fingers of the left hand push *downward only* to maintain an even pressure on the knife blade over the stone. If the left hand pushes laterally with the sharpening stroke, and the knife catches on an irregularity, then the fingers will slip off the edge and can be cut severely by the freed knife blade. With a sweeping motion toward the right of the stone, draw the knife completely across the stone, against the cutting edge of the blade. The correct motion is achieved when that portion of the blade nearest the handle begins the stroke and the extreme tip of the blade ends the stroke. The procedure is reversed to hone the opposite side of the blade.

3. **Steeling** (fig. 2) is accomplished by using various kinds of steels that are adapted to specific uses. The carborundum and ribbed steels are for kitchen use where knives need not be razor sharp and the steel is actually

[6] Adapted from Smith, G. C., Carpenter, Z. L., and King, G. T. 1974. Laboratory Exercises in Elementary Meat Science. Kemp Publishing Co., Houston, Tex.

honing the knife. The mirror-smooth steel for razor-sharp edges is the one best suited for slaughter and meat cutting. The steel should be held firmly in the left hand in a position almost diagonal to the body but with a slightly upward tilt. This permits the free movement of the knife across the steel without drawing it too close to the supporting hand. Place the heel of the blade against the near side of the tip at a 20° to 25° angle and bring the blade down along the steel toward the left hand with a quick, swinging motion of the right wrist and forearm. The entire blade should pass lightly over the steel. Return the knife to a position on the opposite side of the steel and repeat the same motion.

To test the knife for sharpness and smoothness of edge, run the edge of the blade lightly over the flat of the thumbnail. If the knife slides easily, it lacks the proper sharpness. A sharp edge will dig into the nail and a rough or wire edge will rasp the nail.

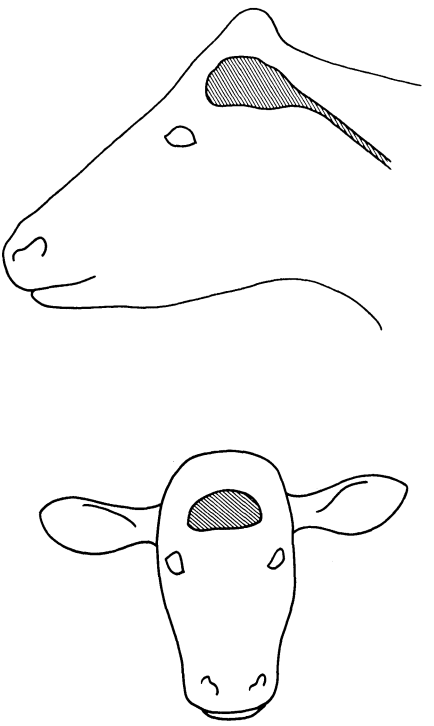
SLAUGHTER

Stunning

The animal must be killed as quickly and humanely as possible. In a slaughter house the cattle are driven into a knocking pen where they are stunned with a compression gun. On the farm a mechanical stunner is usually not available; therefore, stunning is best accomplished with a well-directed long or long rifle bullet from a .22-caliber rifle. *As with the use of any firearms, normal precautions should be taken when stunning the animal.*

The purpose of stunning is to render the animal unconscious so that its throat can be cut. When stunning is accomplished with a .22-caliber rifle, the bullet should penetrate the skull and strike the brain. The location of the brain is shown in figure 3. If done properly the animal will be immobilized for several minutes.

It is best to have the animal secured to a tree or strong post. Direct the bullet at the intersection of two imaginary lines ex-



PN–4549

Figure 3.—Location of the brain.

tending from the right edge of the poll to the center of the left eye and from the left edge of the poll to the center of the right eye as shown in figure 4.

Bleeding

Bleeding is a very important part of the slaughtering operation and should be done not more than 2 minutes after the animal is down because the increased blood pressure may break the capillaries and cause an unattractive condition in the meat called "blood splash."

The easiest and safest method for quick bleeding is to bleed the animal while it is still on the ground. Standing behind the animal, grasp the lower jaw (fig. 5), pull the head back slightly, and cut across the throat from ear to ear as deeply as possible (fig. 6). If the blood does not flow freely, cut deeper. A sharp skinning or boning knife is appropriate for this part of the operation.

"Pumping" the animal will assure more complete bleeding. This can be accomplished by lifting the hindquarter with the tail, pulling the foreleg, and applying a pumping motion with a foot in the flank (fig. 7).

Removal of Legs

If the animal has to be moved to another location for hoisting, tie a rope or chain around the hindlegs above the hocks (fig. 8). Position the animal with the hindlegs directly beneath the hoist. Roll the animal onto its back and

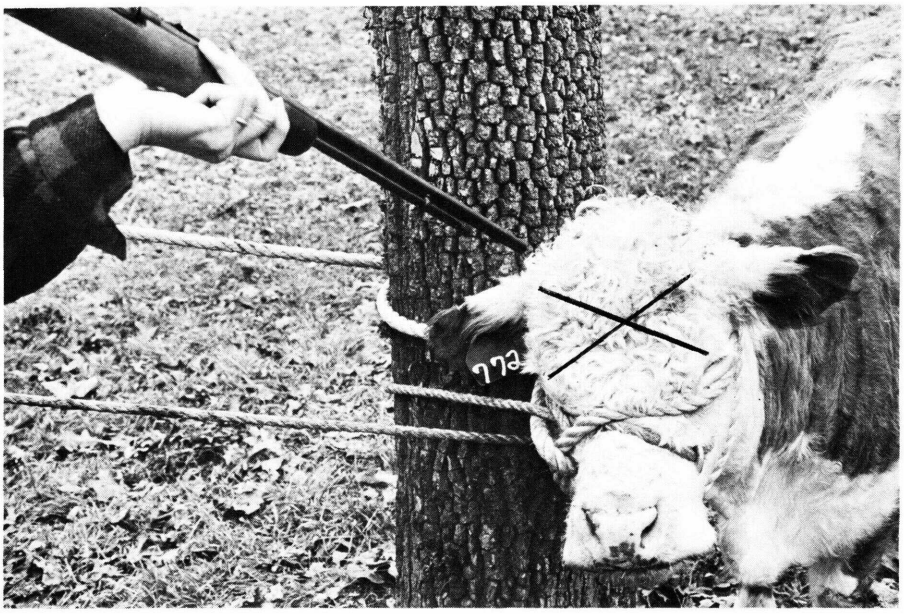


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Figure 4.—The X shows where to stun.

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Figure 5.—Sticking. Stand behind the animal and grasp the lower jaw.

PN–4552

Figure 6.—Cutting throat.

prop it in place with two concrete or wooden blocks (fig. 9).

Begin removal of the hindlegs by cutting through the hide and tendons between the sole of the foot and the dew claws (fig. 10). Split the hide from the dew claws down the leg to the hock and over the rear of the round to a point about 6 inches below the hock and remove the hide from each hindleg (fig. 11). Remove the hindleg by cutting through the joint closest to the foot with a knife or saw (figs. 12 and 13). Be careful *not* to cut the large ten-

PN-4553

Figure 7.—Pumping to assure complete bleeding.

PN-4554

Figure 8.—Dragging to tree. Secure both hindlegs.

PN–4555

Figure 9.—Position of carcass for hide removal.

dons just below the hock for they will be needed when hoisting the carcass.

To remove the foreleg, cut through the hide and tendons at the joint closest to the foot. This joint is approximately 1 inch above the bony rise in the knee. Split the hide from the dew claws to the original cut and skin out the forelegs. Remove the forelegs with a knife or saw at the original cut (fig. 14).

Siding

After all legs have been removed, split the hide down the midline from the throat to the anus (fig. 15). This split should be made by inserting the point of the knife under the hide with the blade turned up as shown in figure 15. This procedure is referred to as cutting from inside out and protects against meat contamination from materials on the hide.

If a cow is being slaughtered, *do not* split through the center of the udder. Cut the hide around each side of the udder and remove by lifting it and cutting along the body wall. Removal of a large udder will make siding easier and prevent any fluids contained in the udder from spilling onto the meat.

Begin siding by splitting the hide on the inside of the round (fig. 16). Starting with the cut made in removing the hindleg,

PN–4556

Figure 10.—Cutting beneath dew claws.

Figure 11.—Removing hide from hindlegs. PN–4457

Figure 12.—Removing hindleg by cutting through joint. PN–4558

PN–4559

Figure 13.—Removing hindleg by sawing through joint.

cut downward to the midline split, just behind the scrotum or udder. Cut "inside-out" and *do not* cut through the fat into the meat. Skin the inside round around to the front of the leg, leaving all fat and connective tissue on the carcass and not on the hide (fig. 17). Inexperienced butchers have a tendency to cut too deep in this area, so cut slowly and carefully.

Removal of the hide from the belly or abdomen is the next step. Beginning at the midline split, cut under the hide until it can be grasped with the other hand (fig. 18). Loosen the hide along the flat surface of the belly from the round forward to the brisket (fig. 19). The insides of the forelegs can be skinned but *not* the out-

PN–4560

Figure 14.—Removing the forelegs with knife or saw.

PN–4561

Figure 15.—Splitting hide down midline.

PN–4562

Figure 16.—Splitting the hide on the inside of the round.

PN–4563

Figure 17.—Skinning the round.

PN–4564

Figure 18.—Removing hide from belly.

PN–4565

Figure 19.—Loosening the hide from round to elbow.

side, which protects the carcass from contamination when it is hoisted (fig. 20).

Siding (removal of the hide from the sides) is the next step and is very difficult to do perfectly. This requires a knife with a sharp, smooth edge; therefore, frequent steeling of the knife may be necessary. Grasp the loosened hide and pull it up and outward (fig. 21). This places tension on the hide, removes wrinkles, and allows the knife to glide smoothly. Holding the knife firmly, place it against the hide with the blade turned slightly outward to avoid cutting the thin flat muscles which cover the sides of the carcass. With smooth, sweeping strokes of the knife, skin from the front of the hindleg to the point where the hide was cut over the elbow. At this point, the muscles become thin and so tightly bound to the hide that it will be necessary to leave them on the hide. Cut through the muscles and continue skinning as far down the side as possible (fig. 22).

Return to the rear of the carcass and remove the hide left on the inside of the rounds (fig. 23). *Do not* skin the outside of the round because this can be done more easily after the carcass is hoisted.

Skinning the Head

The head should be skinned by splitting the hide down the midline (fig. 24) and by skinning down each side of the head and neck as far as possible (fig. 25).

PN-4566

Figure 20.—Skinning the inside of the forelegs.

PN-4567

Figure 21.—Removing hide from sides (siding).

PN-4568

Figure 22.—Siding completed.

PN-4569

Figure 23.—Removing hide from the inside of the round.

PN-4570

Figure 24.—Skinning the head.

PN-4571

Figure 25.—Hide removed from neck and head.

Remove the tongue by cutting just inside each jaw to the forward point where the jaws join (fig. 26), making sure the tongue is straight so that it will not be cut. Pull the tongue out and complete its removal by cutting through the cartilage at its base (fig. 27). Wash the tongue thoroughly in clean water and put it in ice or ice water.

Remove the cheek meat from each side of the jawbone by cutting close to the bone and down to the rise of the bone just over each eye (fig. 28). Wash thoroughly in clean water and put it in ice or ice water.

Opening the Brisket

Beginning at the cut made for bleeding, split the muscles along the midline of the neck up to the end of the brisket. Cut only as deep as the windpipe. Cut lengthwise along the center of the brisket from the neck to its rear edge (figs. 29 and 30). *Be careful* not

PN-4572

Figure 26.—Loosening the tongue.

PN-4573

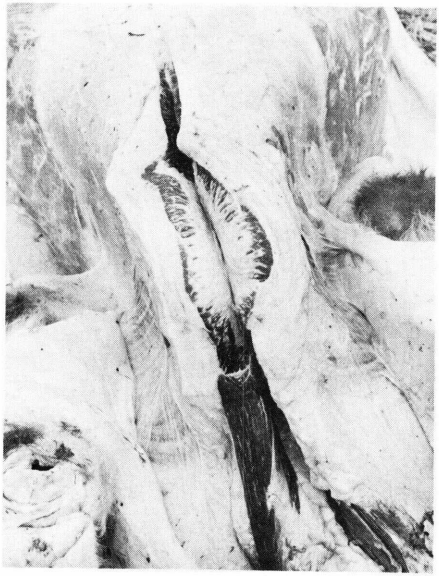
Figure 27.—Removing the tongue.

PN-4574

Figure 28.—Removing cheek meat from jawbone.

PN–4575

Figure 29.—Splitting fat and lean of brisket.



PN–4576

Figure 30.—Fat and lean of brisket—split to bone.

PN–4577

Figure 31.—Sawing the brisket bone.

to cut beyond the tip of the brisket because the viscera may be punctured. Split the neck open along the midline and loosen the windpipe and esophagus. Saw completely through the brisket as shown in figure 31. Tie the windpipe and esophagus with string to avoid spilling paunch materials when the carcass is hoisted (fig. 32).

Hoisting and Rumping

Insert the spreader or singletree between the large tendons on the hindlegs (fig. 33). For safety, the hocks should be tied securely to the spreader. After the spreader is firmly in place, hoist the carcass to a convenient working height, usually waist high, for skinning the rounds. Skin along the outside of the rounds leaving the fell, the thin membrane that lies between the meat and skin, on the round (fig. 34). This membrane protects the meat from rapid drying. After skinning around the anus, loosen it by cutting around it deep into the pelvic canal (fig. 35). Pull the large intestine about 6 inches from the pelvic cavity (fig. 36) and tie it with a string near the opening as shown in figure 37. To facilitate later hide removal from

PN-4578

Figure 32.—Tying the windpipe and esophagus.

PN–4579

Figure 33.—Hoisting the carcass.

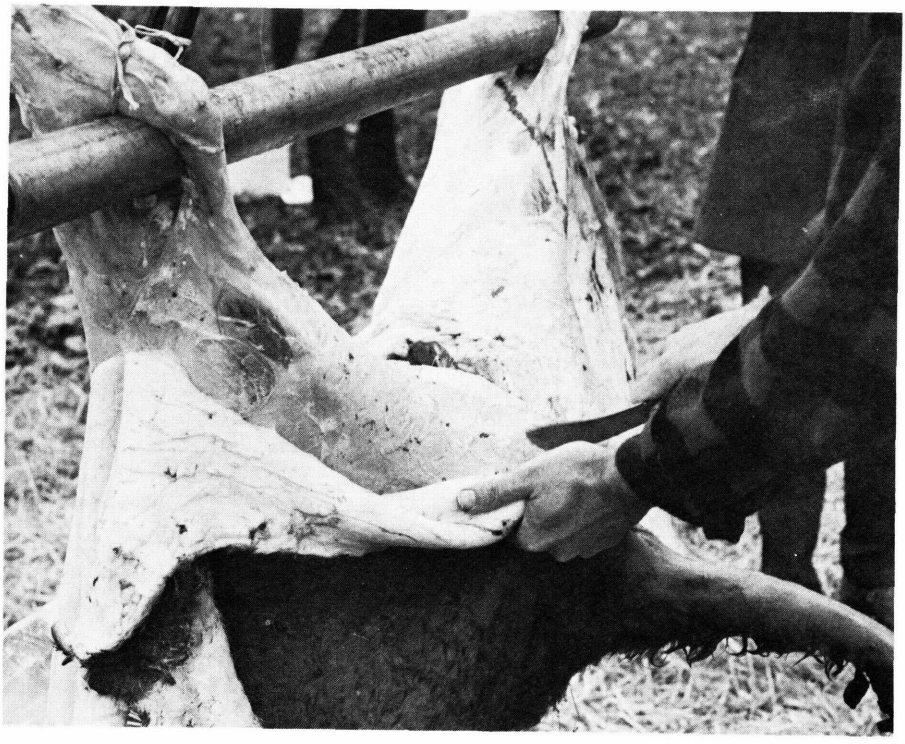
the tail, remove a thin strip of hide from its top side (fig. 38).

Skin the outside of the round, leaving the fell membrane on the round (fig. 39). You can usually pull off the hide in this region by hand, leaving the fell intact. At the bottom of the round, the fell is severed as shown by the arrows in figure 40. If a steer or bull is being slaughtered, remove the penis by cutting under it and severing its connection at the anus. Remove the hide from around the anus.

Evisceration

Split the pelvic bone by first locating the seam between the rounds, then following this seam to the bone and cutting through the bone with a knife or saw (figs. 41 and 42).

Hoist the carcass until the front shanks clear the ground by about a foot. Cut down the midline by inserting the knife handle *inside* the body cavity with the knife blade extended *outward* as shown in figure 43. This procedure ensures that the paunch and intestines are not cut. Continue cutting down the midline to the cut made when opening the brisket (figs. 44 and 45). Loosen the large intestines as shown in figure 46, making sure that the pelvic and kidney fat, as well as the kidneys, are left attached to the carcass. Pull down on the paunch and intestines and allow them to



PN-4580

Figure 34.—Removing the hide from the round (rumping).

PN-4581

Figure 35.—Skinning around the anus (bung).

PN–4582

Figure 36.—Pulling anus from pelvic canal.

PN–4583

Figure 37.—Tying the anus.

PN-4584

Figure 38.—Skinning the tail.

fall into a container or onto the ground. As the paunch falls, a small cut with a knife will free the liver from the connections to the intestines and paunch (fig. 47). *Do not* cut the esophagus, which extends through the diaphragm. The esophagus will be left attached until the lungs are removed.

Remove the liver by reaching behind it and pulling while cutting the connective tissue (fig. 48). During removal, check for any abscesses (yellow or white pus pockets) or scar tissue, which are indications of infections. If these are present, the entire carcass should be checked thoroughly for other signs of infection or disease (discussed later in the section on examining the carcass). Once the liver is removed, separate the gall bladder by cutting under it (fig. 49). Wash the liver thoroughly and put it in ice or ice water.

To remove the lungs and heart,

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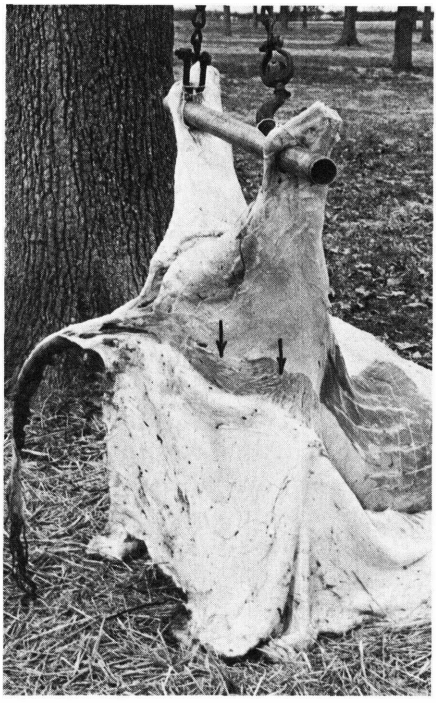
Figure 39.—Skinning the outside of the round.



PN–4586

Figure 40.—Hide removed from rounds.

PN–4587

Figure 41.—Splitting the pelvic bone with a knife.

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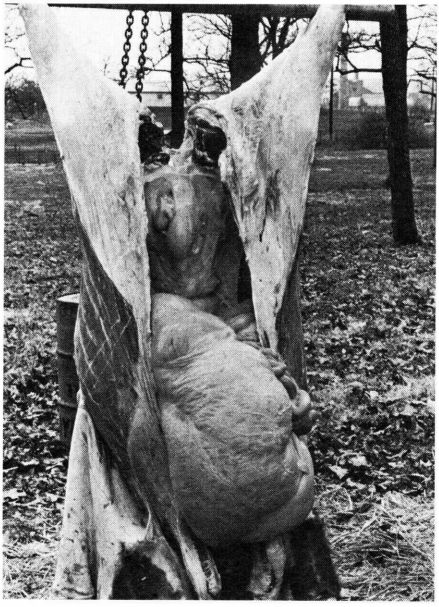
Figure 42.—Splitting the pelvic bone with a saw.

PN–4589

Figure 43.—Opening the belly—knife blade outward.

PN–4590

Figure 44.—Opening the belly.



PN–4591

Figure 45.—Belly opened to the brisket.

PN–4592

Figure 46.—Loosening the large intestine.

PN–4593

Figure 47.—Freeing the intestines and paunch from the liver.

PN-4594

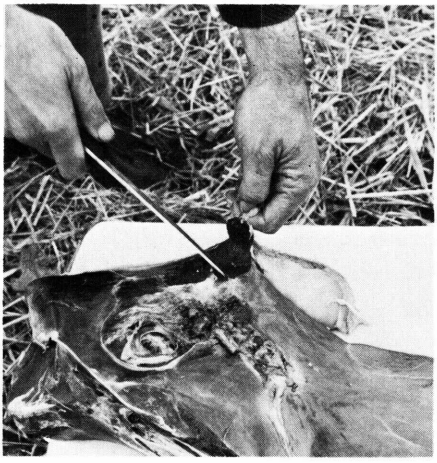
Figure 48.—Removing the liver.

cut through the diaphragm, the thin sheet of muscle, and the white connective tissue that separates the lungs and heart from the stomach and intestines. This cut is made at the edge of the thin muscle as shown by the arrows in figure 50. Cut beneath the hanging muscle and the large blood vessels just below the kidneys to the backbone. Remove the heart, lungs, and windpipe as one unit by pulling them down while cutting between them and the backbone (fig. 51). *Be sure* to note any adhesion of the lungs to the body wall because this is a sign of infectious diseases.

The heart is removed from the lungs by cutting across the top of the heart (fig. 52). Wash it thoroughly and put it in ice or ice water for rapid chilling. If the tripe, or stomach, is to be saved, empty the stomach as quickly as possible and rinse it. Thorough cleaning can be done later.

Dropping the Hide

Split and remove the hide remaining on the front shanks (fig. 53). Skin down each side of the shanks and neck, meeting at the backbone (figs. 54 and 55). Skin around the loin and under the tail. The remaining hide on the tail can be pulled or cut off at this time (fig. 56). Remove the tail at its base (fig. 57), wash it thoroughly, and put it in ice or ice water. Skin over the poll of the head and down the face, removing the hide at the muzzle (figs. 58 and 59). The head can be removed at this point; however, if it is left touching the ground, it will give support during splitting.



PN-4595

Figure 49.—Removing the gall bladder.

PN–4596

Figure 50.—Cutting through the diaphragm.

PN–4597

Figure 51.—Removing the heart and lungs.

PN–4598

Figure 52.—Separating the heart from lungs.

Splitting the Carcass

Split the warm, dressed carcass into halves. This allows for free circulation of air around the halves, to get a quicker chill. Also, a dressed beef carcass is heavier and harder to handle if it is not split.

To split the carcass, first saw through the sacral vertebrae or tail region from the inside (fig. 60). As soon as you have made the cut to the rise of the pelvic arch, saw from the outside. To make sawing through the center of the vertebrae easier, mark the correct line you wish to take down the backbone with a knife. Mark over the top of the bony spinal processes, which can be

PN–4600

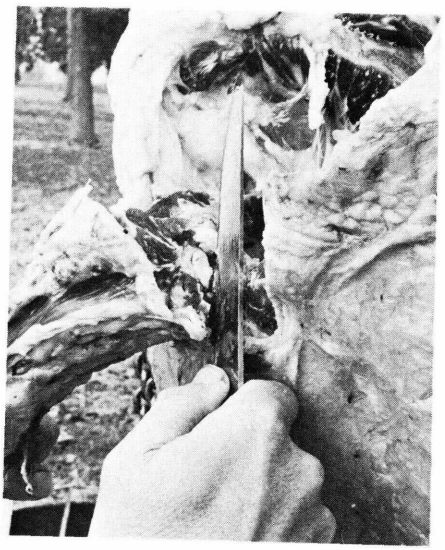
Figure 54.—Skinning the front legs.

PN–4599

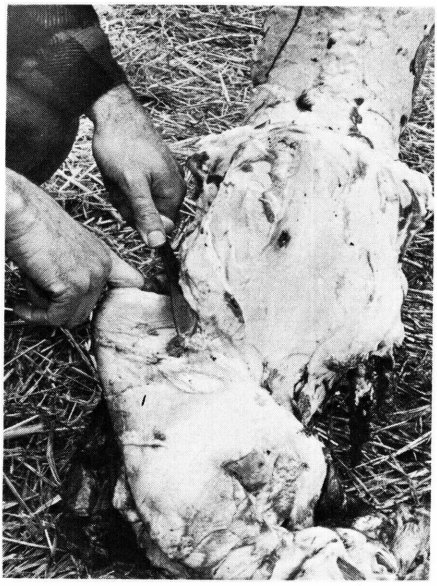
Figure 53.—Skinning the front legs.

Figure 55.—Removing hide from neck. PN–4601

PN–4602
Figure 56.—Pulling hide from tail.



PN–4603
Figure 57.—Removing tail.



PN–4604

Figure 58.—Skinning the head.

easily located with the fingers (fig. 61). Make the split through the loin and rib. In the chuck region, lower the handle of the saw to make sawing easier (fig. 62). If the split gets off center, continue through to the next vertebra and realign the saw.

If brain removal is desired, continue the split through the poll and down the center of the face. After sawing half way down the face, pull the halves of the head apart and remove the brains (fig. 63). Wash the brains thoroughly, checking for bone fragments. If the animal has been shot the brain will contain metal fragments and should not be saved.

Remove the head at the first

PN–4605

Figure 59.—Skinning the head.

joint next to the poll. Head removal is much easier after splitting (fig. 64). Then remove the kidney and kidney fat (fig. 65).

Wash the carcass with clean water, especially down the split backbone where bone dust accumulates. With a knife, remove any contamination which cannot be washed off. Pumping the front legs up and down a few times helps drain the blood from the forequarters.

Examining the Carcass

All the internal organs and the dressed carcass should be examined carefully for any abnormalties or conditions that might affect the fitness of the meat for food. Usually, a meat inspector or graduate veterinarian is the only person qualified to do this, but under farm conditions it becomes necessary for you to look for the obvious signs of disease or damage. If any part of the viscera or carcass is questionable, you should obtain expert advice.

Bruises, minor injuries, parasites in the organs and enclosed abscesses, and single tumors are frequently local conditions that can be easily removed. However, the presence of congestion or inflamation of the lungs, intestines, kidneys, inner surface of chest or abdominal cavity, and numerous yellowish or pearl-like growths scattered throughout the organs should be viewed seriously. Carcasses and viscera having such abnormalities should be examined

PN–4606

Figure 60.—Splitting the sacral vertebrae.

PN–4607

Figure 61.—Line of cutting.

PN–4608

Figure 62.—Sawing through the chuck.

PN–4609

Figure 63.—Removing the brains.

PN–4610

Figure 64.—Removing the head at the atlas joint.

PN–4611

Figure 65.—Removing the kidney and surrounding fat.

by a graduate veterinarian and his opinion obtained as to the wholesomeness of the meat. You should check with a cooperating veterinarian before slaughtering the animal to be certain he will be available if you should seek his advice.

Loading the Carcass

Separate the halves into quarters by cutting between the last two ribs, leaving one rib on the hindquarter (fig. 66). Leave a 4-inch section uncut on the flank side and saw through the backbone (fig. 67). Make small handholds between the first two and the last two ribs of the forequarter to make loading of the forequarter easier (fig. 68).

When ready to load, place a clean cloth (old sheets work fine) or plastic in the vehicle. With someone holding each forequarter, cut the attachment left on the flank side (fig. 69). If alone, *be sure* to hoist the carcass so that the opposite side does not fall to the ground. Lower hinds until they can be reached and removed from the spreader (fig. 70). Place the forequarter in the vehicle with the bone side down and the hindquarter on top with the bone side up (fig. 71). Cover the meat to prevent contamination during transportation.

CHILLING THE CARCASS

The surfaces of freshly slaughtered beef carcasses are contaminated with bacteria that can spoil the meat unless their growth is promptly checked. Bacterial growth can be slowed by prompt chilling and keeping the carcass at low temperatures. If the weather is suitable (28° to 35° F), the carcass or quarters can be wrapped in a sheet and hung to chill in a well-ventilated shed. Wrapping with a clean cloth will partially protect the carcass from contamination and help smooth out the fat on the outer surface.

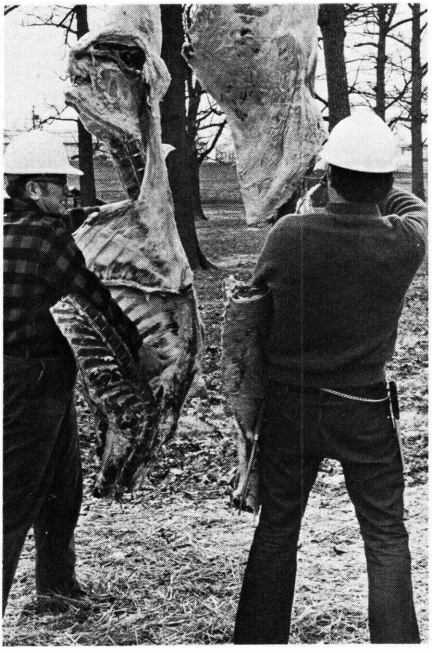
Do not allow the carcass to freeze because freezing within 1 day after death may toughen the meat. If the carcass cannot be chilled to below 40°F on the farm, it should be transported to the local locker plant or market for chilling. Chilled beef should be aged at least 2 to 3 days to ensure that rigor is complete. There is no benefit to aging beyond 7 to 9 days. In fact, subsequent freezer

PN-4612

Figure 66.—Ribbing the carcass.

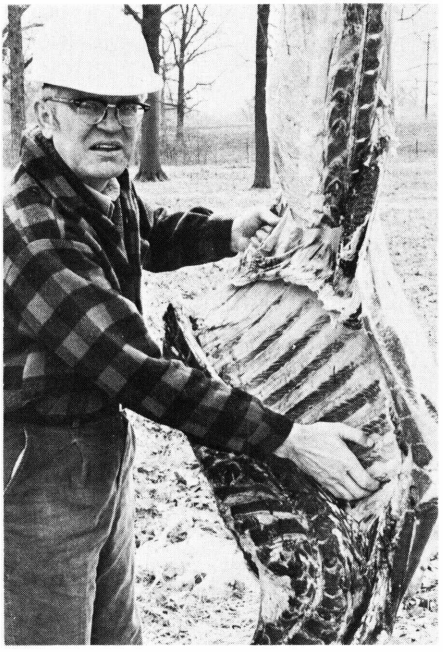
PN–4613

Figure 67.—Sawing through the backbone.



PN–4614

Figure 68.—Grasping the forequarter prior to loading.



PN–4615

Figure 69.—Separating the forequarter from the hindquarter.

storage life may be reduced by long aging periods.

CUTTING

Use the following guidelines to prepare cutting and packaging instructions for the plant if the carcass is not cut and wrapped on the farm.

Steaks.—Those from the loin and rib, which are to be broiled, should be an inch or more in thickness. Those from the round and chuck, or which are to be cooked slowly with moist heat, should be ½ to ¾ inch thick. If two or more steaks are packaged together, they should be separated by two sheets of plastic or moisture-resistant paper. Although the size and shape of a steak will largely determine how many servings it will yield, allow ¾ of a pound per person (bone-in uncooked) where practicable.

PN–4616

Figure 70.—Removing the hindquarters from the spreader.

Roasts.—Allow ¾ pound (uncooked) per serving for bone-in roasts such as blade chuck roasts

PN–4617

Figure 71.—Carcass loaded in auto.

or rump roasts and ½ pound (uncooked) per serving for boneless roasts such as sirloin tip or heel of round.

Ground beef and stew meat.— Allow ½ pound (uncooked) per serving.

Carcass Cutting Equipment

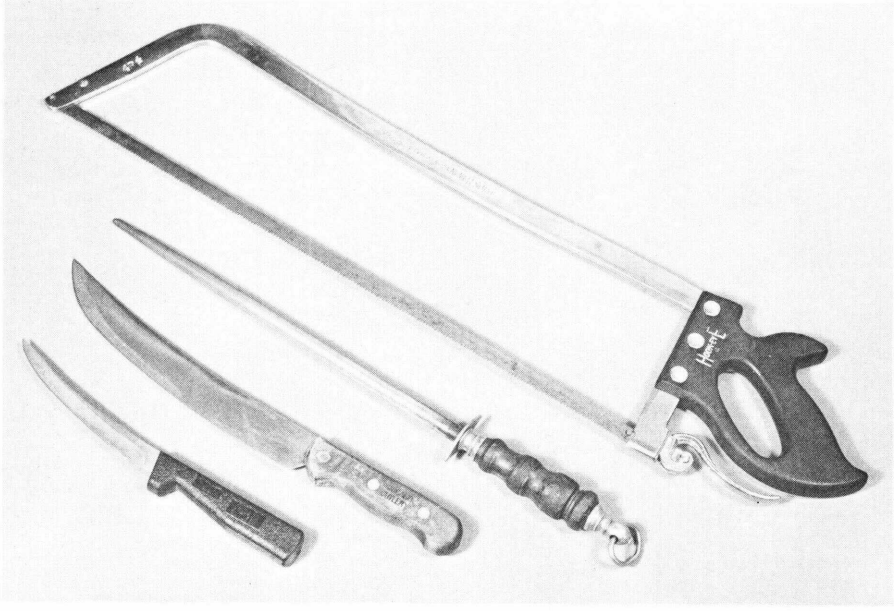
Elaborate and expensive equipment is not necessary, but certain items are essential (fig. 72). The following equipment is recommended:

1. Steel.
2. Steak knife.
3. Boning knife.
4. Meat saw.
5. Freezer paper (see section on "wrapping").
6. Freezer tape.
7. Meat grinder (electric or hand-driven).

CUTTING THE CARCASS

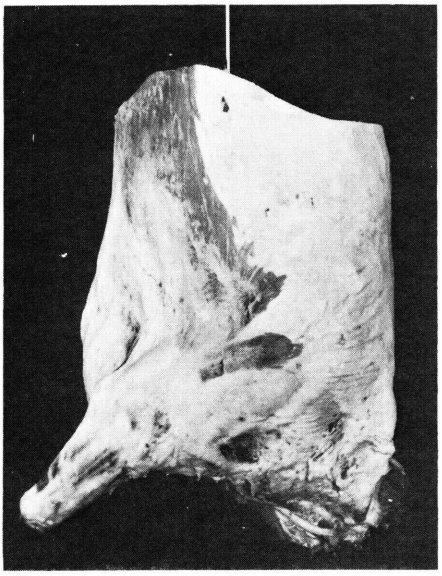
Forequarter

The forequarter (fig. 73) is best processed by separating it into two more manageable sections and making usable cuts from each section. The following cutting procedure differs from the usual style of retail cutting by separating the forequarter between the sixth and seventh ribs instead of between the fifth and sixth ribs. This approach was taken to preclude difficulties for the novice which might arise with older carcasses, whose blade bone cartilage would have become ossified and thus impede the knife cut. Counting the rib closest to the neck as number one, locate the sixth and seventh ribs. Insert the knife between these two ribs (fig. 74) at about the midpoint of



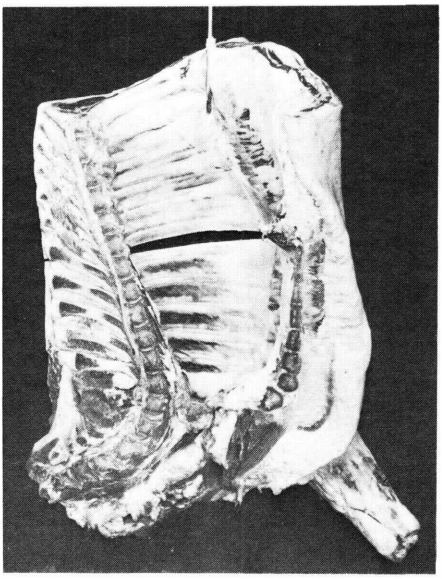
PN-4618

Figure 72.—Cutting equipment.



PN–4619

Figure 73.—Forequarter.

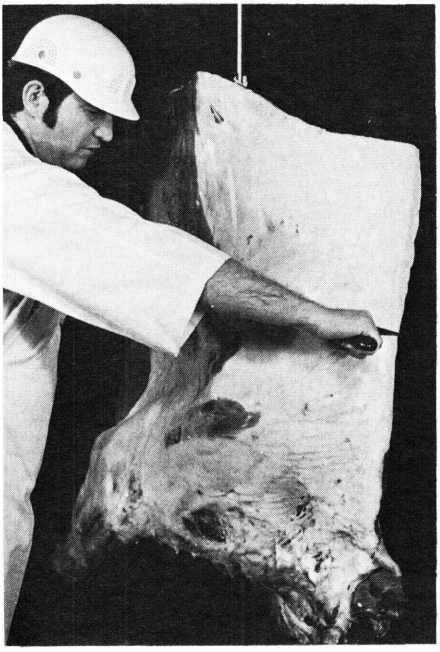


PN–4620

Figure 74.—Knife cut between sixth and seventh ribs.

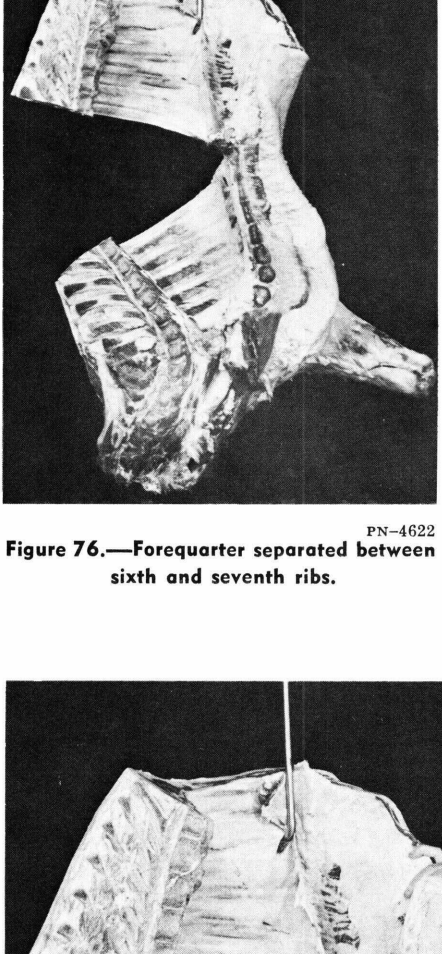
their length and cut towards the brisket. From the outside (skin side) of the forequarter, (fig. 75) insert the knife through the previously made cut. Holding the blade perpendicular to the outer surface, cut toward the back line until you meet the bone. After reaching the backbone, continue forward in a flat, circular motion, cutting all the flesh.

Saw through the backbone keeping the saw blade parallel to the surface of the knife cut. The crosscut chuck will then drop down approximately a foot (fig. 76), so make certain you have plenty of clearance from the floor. The chuck portion of the forequarter of a 1,000-pound steer will weigh approximately 100 pounds. Call on your strongest helper to hold the chuck while you saw through the brisket edge (fig.



PN–4621

Figure 75.—Knife cut through the meat to the bone.



PN–4622

Figure 76.—Forequarter separated between sixth and seventh ribs.

77), completing the separation of the two parts of the forequarter.

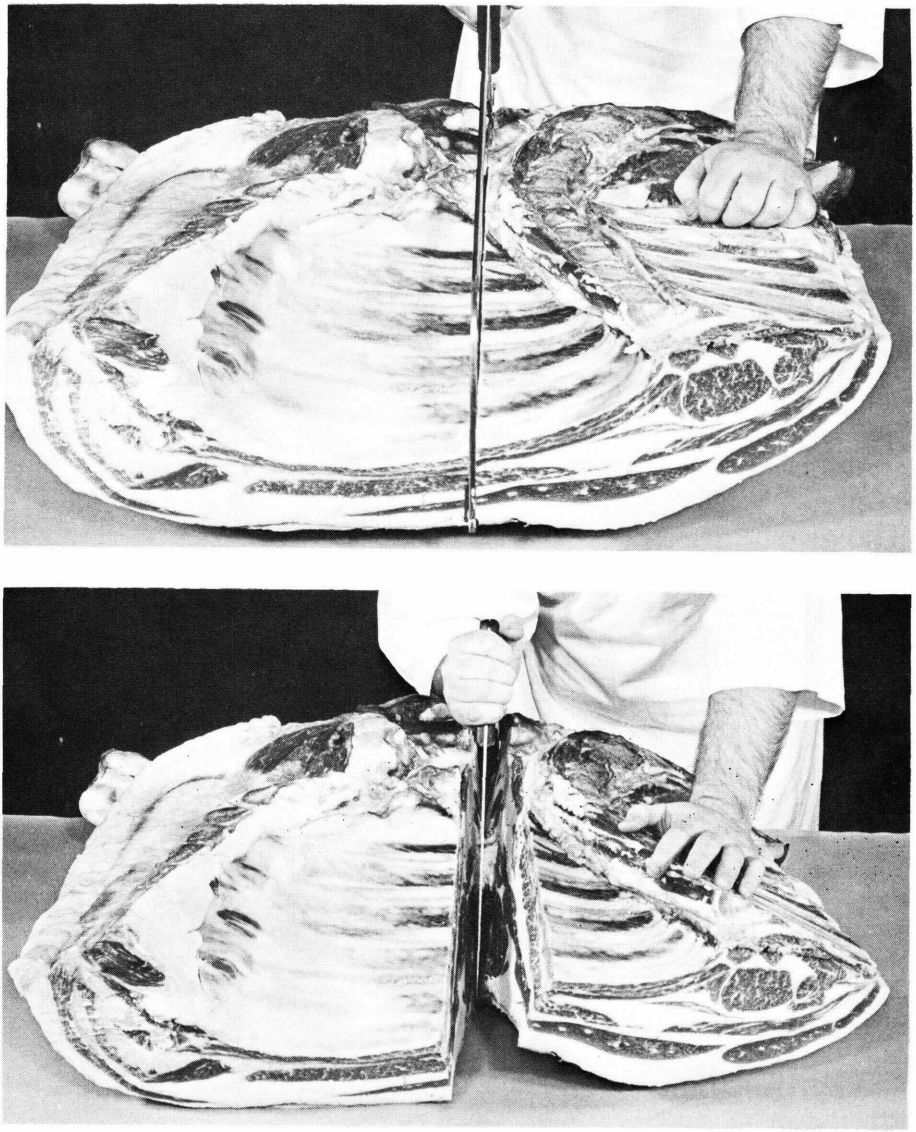
The crosscut chuck is then placed on the cutting table, bone side up, and divided into two pieces. First make a saw cut through the ribs. This cut begins on the first rib about 1 inch (fig. 78, top) from the inner curve of the split surface of the backbone and parallel to the top line. After sawing through the ribs, with the knife blade held perpendicular to the table, make a knife cut between the sawed ends of the ribs through the meat to the shoulder blade (fig. 78, bottom). Saw through the shoulder blade, separating the crosscut

PN–4623

Figure 77.—Sawing through the brisket edge.

chuck into a blade and arm section. The fourth, fifth, and sixth rib portions of the arm are removed by cutting between the third and fourth ribs and sawing through the brisket edge (fig. 79). These rib portions may be made into short ribs, cut for stew, or boned and made into ground beef.

The shoulder joint and first arm roast are then removed. The



PN–4624
PN–4625

Figure 78.—Separating the arm and blade sections.

shoulder joint extends from the cut surface 2 to 3 inches toward the foreshank.

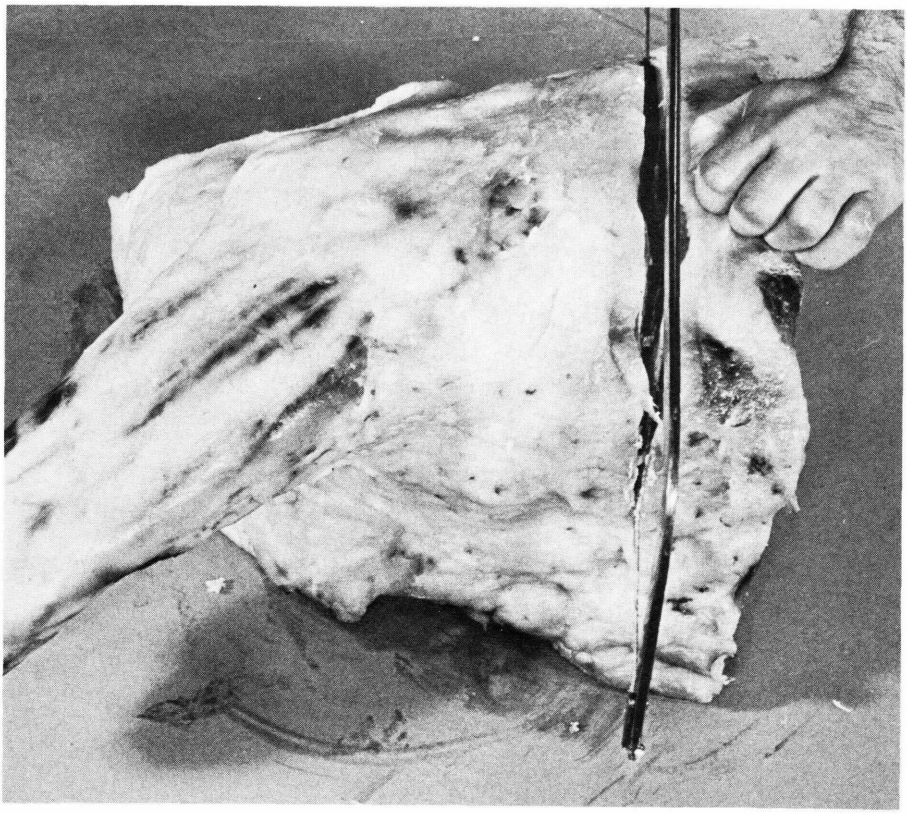
Press over the rounded joint until you locate where it sharply declines and make a knife cut through that point over the bone and through the meat. Saw through the arm bone (fig. 80), cut through the flesh to the rib bones, and saw through them to remove the shoulder joint and first arm roast. The short ribs and most of the underlying fat are removed by cutting through the natural fat seam (fig. 81).

The large round knuckle bone is separated from the first arm roast by cutting between the two bones (figs. 82 and 83). This bone, with its marrow exposed, is an excellent flavor enhancer for soups and stews. Either arm steaks or arm roasts may be made by parallel cuts across the arm section until you reach the foreshank (fig. 84).

The foreshank is separated from the brisket by a knife cut approximately midway between these two parts (fig. 85). The brisket bones and underlying fat are removed from the brisket by cutting through the natural seam between the thick meaty part of the brisket and the bones (fig. 86). The fat over the outside of the brisket is about the thickest located anywhere on the forequarter, and some of this fat should be trimmed away. Remember to follow the rounded surface of the lean. The foreshank may be boned and the meat made into ground beef or stew. Cross-sectional cuts across the muscle and

PN–4626

Figure 79.—Removing the fourth to sixth ribs from the arm section.

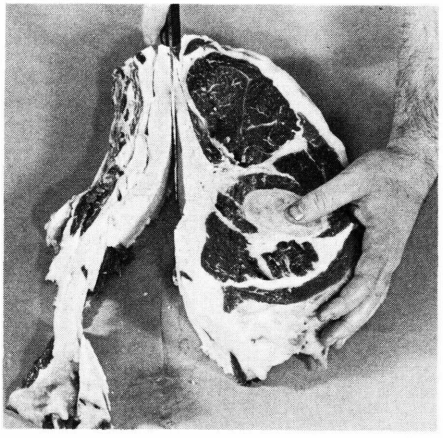


PN-4627

Figure 80.—Sawing through armbone.

bone will greatly enhance soup and stews (fig. 87).

Turning now to the blade section of the forequarter, remove the sixth rib by cutting between the fifth and sixth ribs and sawing through the backbone (fig. 88). This roast, or roasts from the fifth and fourth rib sections, can be used as is (fig. 89) or separated into several usable pieces. The outside muscles may be removed by cutting along the fat seam through the middle of the roast (fig. 90). These muscles

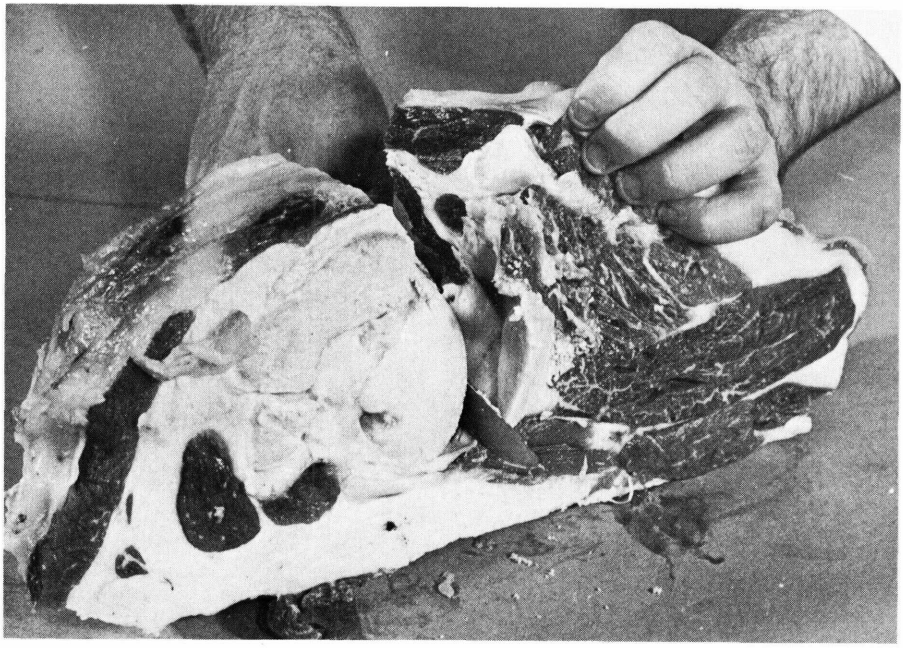


PN-4628

Figure 81.—Removing the shortribs.

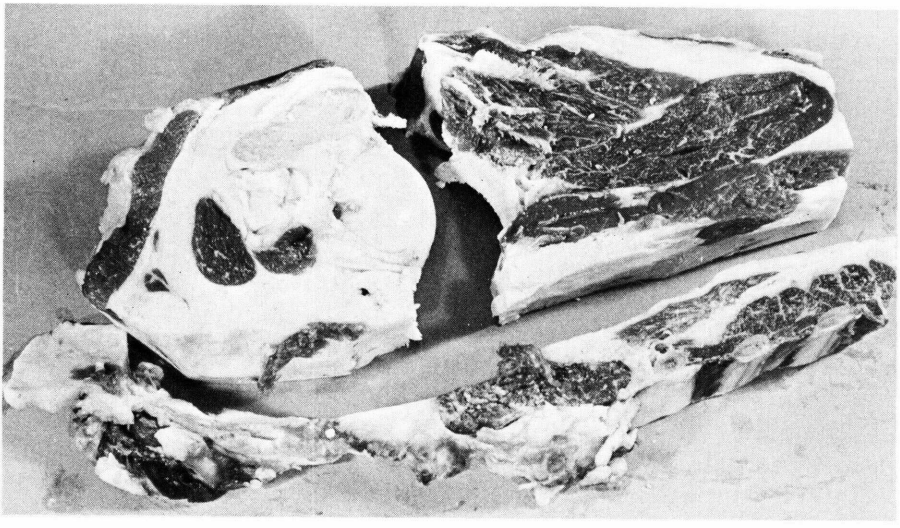
are less tender and should be cooked with moist heat like a pot roast or made into stew meat or ground beef.

The chuckeye portion may be removed (fig. 91) by cutting along the curvature of the rib to the backbone and along its sur-



PN–4629

Figure 82.—Removing the armbone.

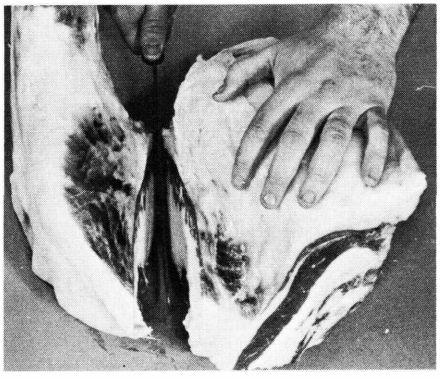


PN–4630

Figure 83.—Removing the armbone.

PN–4631

Figure 84.—Arm roasts from arm section.

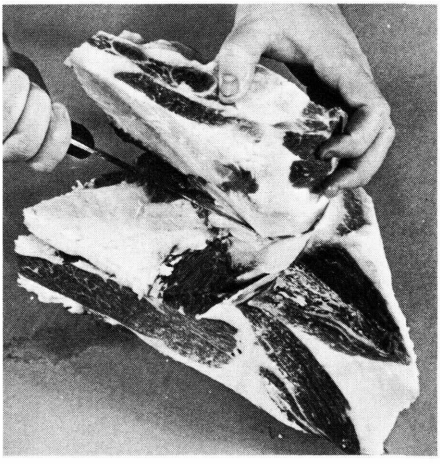


PN–4632

Figure 85.—Separating the foreshank from the brisket.

face to separate the chuckeye from the bone. The heavy yellow ligament located at the edge of the chuckeye is removed. The chuckeye portion is usually tender and excellent for charcoal broiling. The rib bone and attached meat are excellent in soup or stew (fig. 92). Blade steaks or blade roasts can be made in a similar manner by cross-sectional cuts of the blade section to the first rib area (fig. 93).

The neck bones are removed by cutting along each edge of the

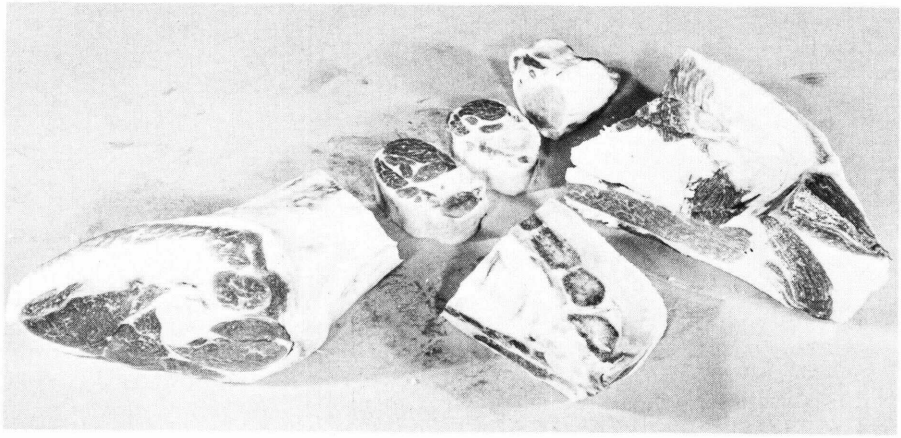


PN–4633

Figure 86.—Removing the deckle.

vertebra, and then undercutting, lifting, and removing the neck bones with attached meat (fig. 94). The neck bones can be divided into several sections for stew or soup stock. The portions of the blade and knuckle bones and surrounding heavy connective tissue are removed. The boneless neck makes excellent ground beef or stew meat.

The rib is separated from the short plate by a saw cut across the ribs (fig. 95) approximately 2 to 3 inches from the edge of the ribeye. Rib steaks and roasts

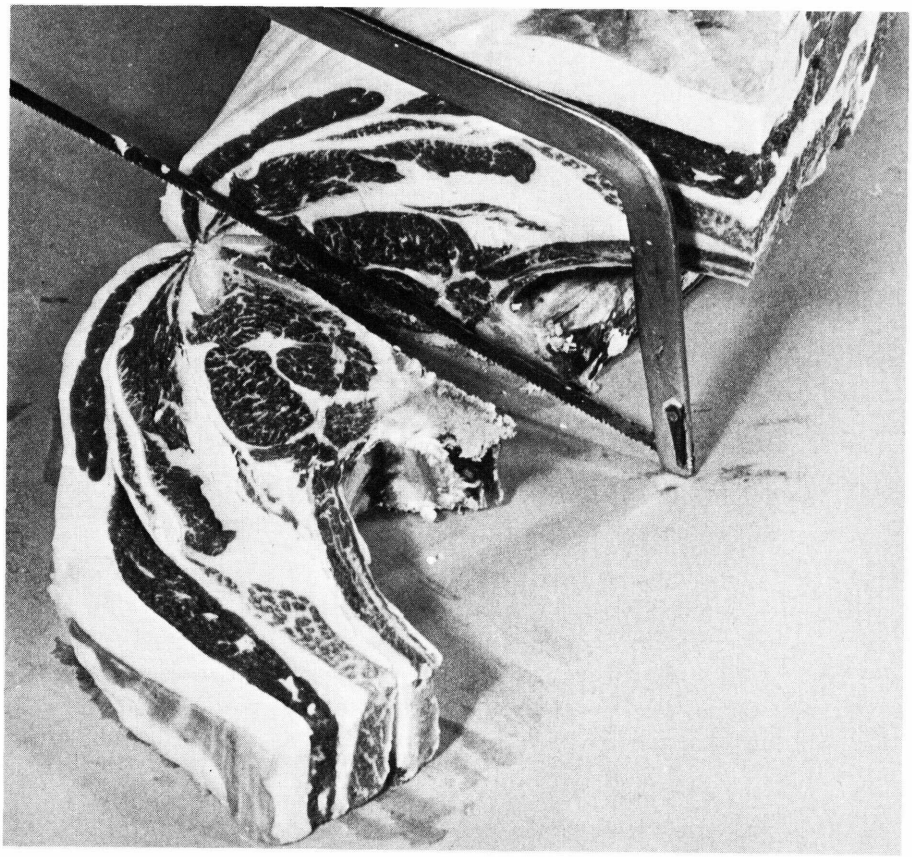


PN-4634

Figure 87.—Foreshank crosscuts and brisket.

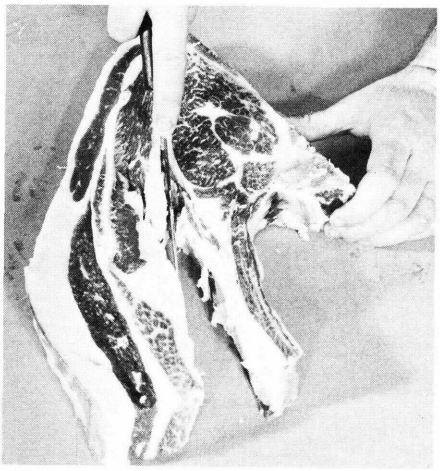
PN-4635

Figure 88.—Removing blade roast between ribs.



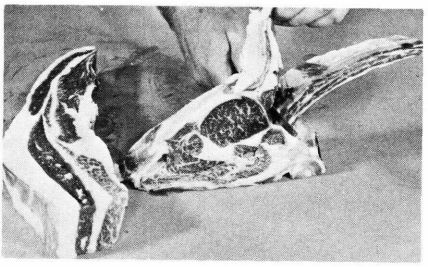
PN–4636

Figure 89.—Blade roast.



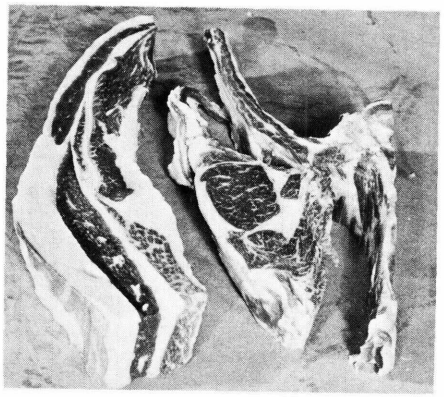
PN–4637

Figure 90.—Removing the outside muscles.



PN–4638

Figure 91.—Removing chuckeye portion.



PN-4639

Figure 92.—Outside muscles, ribeye, and trim.

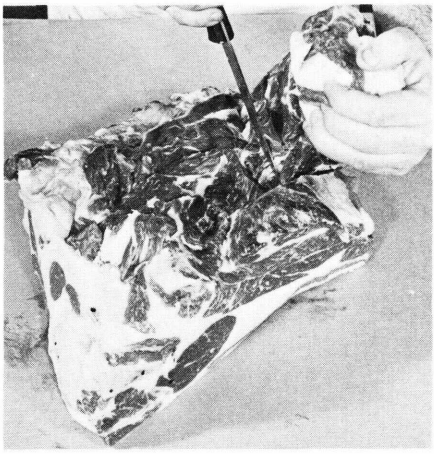
(figs. 96 and 97) are made by cutting between the ribs and sawing through the backbone. The protruding edge of the backbone may be removed by sawing through the spinal cord groove.

If you prefer, you may make boneless rib steaks and boneless rib roasts by following the same procedure used for the fourth, fifth, and sixth rib portion of the chuck, cutting along the curvature of the ribs to the backbone and along its surface, separating the meat from the bones. The boneless rib may be made into one or more roasts and/or steaks. Also, the outside muscles may be removed and the ribeye made into one or more roasts, or it may be sliced into excellent broiling steaks.

Short ribs are made by sawing across the rib ends of the plate at approximately 2-inch intervals (fig. 98) until you reach the white cartilages attached to the ends of the ribs. The 10th, 11th, and 12th rib sections of the short ribs often

Figure 93.—Blade roasts from blade section.

PN-4640



PN-4641

Figure 94.—Removing neck bone.

have a high ratio of fat to lean. Remove these, trim most of the fat away, and use them in soup or stew.

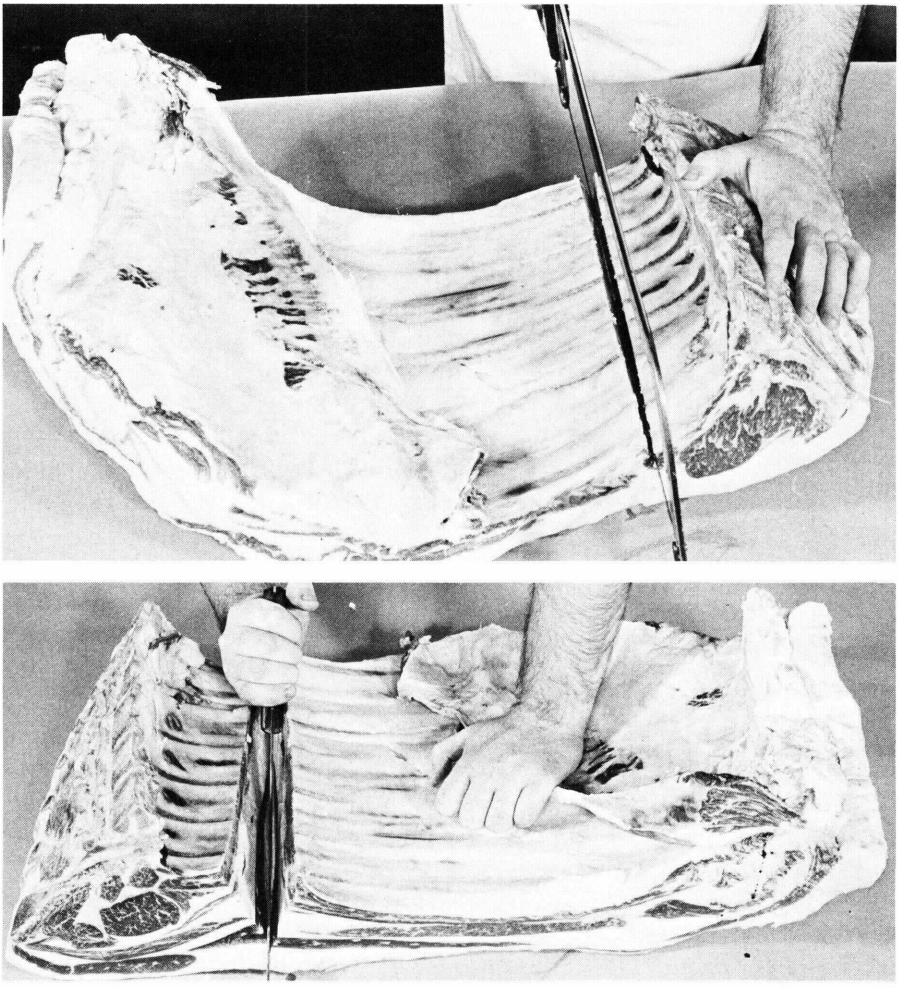
Hindquarter

The flank is the first part removed from the hindquarter (figs. 99 and 100). This is accomplished by making a cut beneath the cod or udder fat near the center of the round and following the surface of the round to the outer edge, loosening the upper edge of the flank. Holding the knife perpendicular to the outer surface cut towards the backbone at approximately a 45° angle until the hipbone is reached. Then, hold the knife parallel to the split surface of the backbone and cut straight down to the 13th rib. Saw through the rib to complete removal of the flank.

Lay the flank on the cutting table with the cod or udder fat up and peel the outer lean muscle back by cutting under the edge next to the cod or udder fat. Then lift and trim close to the lean approximately one-half the length of the flank (fig. 101). Turn the flank over and remove the flank steak. This cut is the hand-shaped muscle at the cod or udder fat end of the flank. First, loosen the edges of the tough membrane overlying the muscle. Lift it up and pull it back to clear the surface of the steak and then cut it off along the edge of the visible lean (fig. 102). Loosen the flank steak muscle at the cod or udder fat end and lift it free from the underlying membrane (fig. 103). Pull it back as far as possible, loosening the edges with the knife. Cut around the lower edge to free the flank steak.

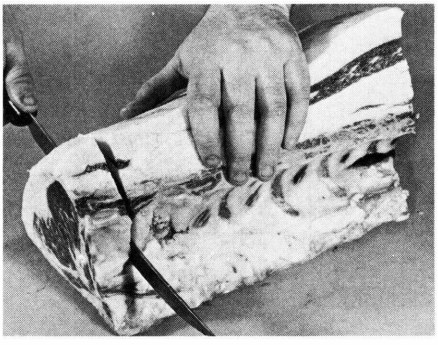
The cod or udder fat and heavy connective tissue are removed from the rest of the lean by cutting through the flank along the edge of the visible lean (fig. 104). The portion of the 13th rib is also removed (fig. 105) from the flank. The boneless flank meat can be used for stew meat or ground beef.

The sirloin tip is removed by starting a cut beneath the knee cap. The knee cap (fig. 106) is located approximately 6 to 8 inches below where the lean meat of the shank disappears into the knee joint. Hold a large steak knife parallel to the floor and make several cuts into the fat until you can penetrate the lean. Cut through the lean 2 to 3 inches until you reach the round bone. Turn the knife downward and cut close



PN–4642
PN–4643

Figure 95.—Separating the rib and short plate.



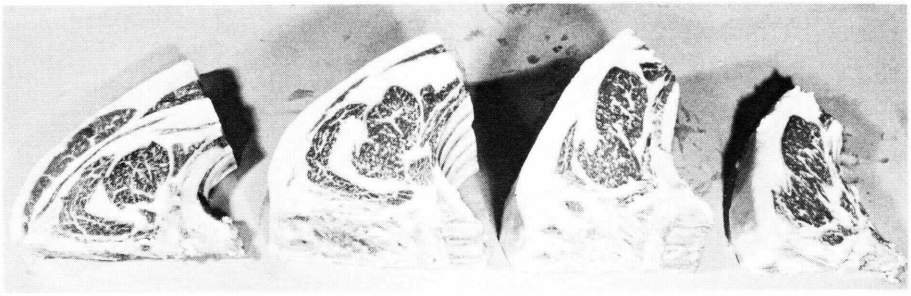
PN–4644

Figure 96.—Removing rib steak from rib.

to the round bone until you reach the hip joint. Turn the knife outward and cut down and out at an approximate 45° angle to remove the sirloin tip (fig. 107).

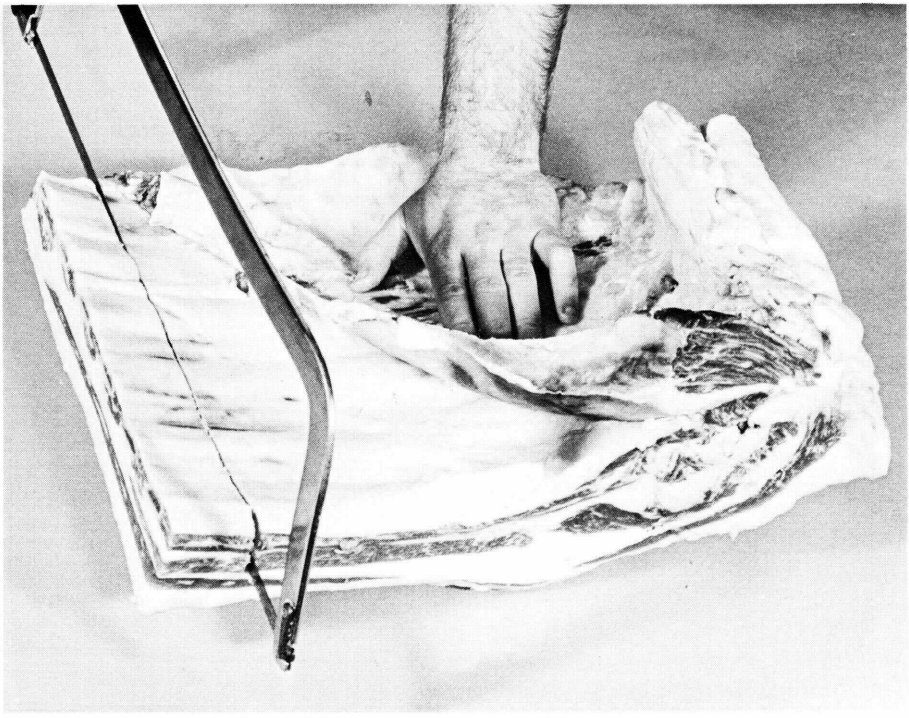
The sirloin tip makes an excellent oven roast (cooked by dry heat), particularly if it is from well-marbled young cattle (fig. 108). The sirloin tip may be divided into two approximately equal roasts by cutting lengthwise (fig. 109). Cross-sectional cuts make good steaks for grilling (fig. 110).

The trimmed hindquarters



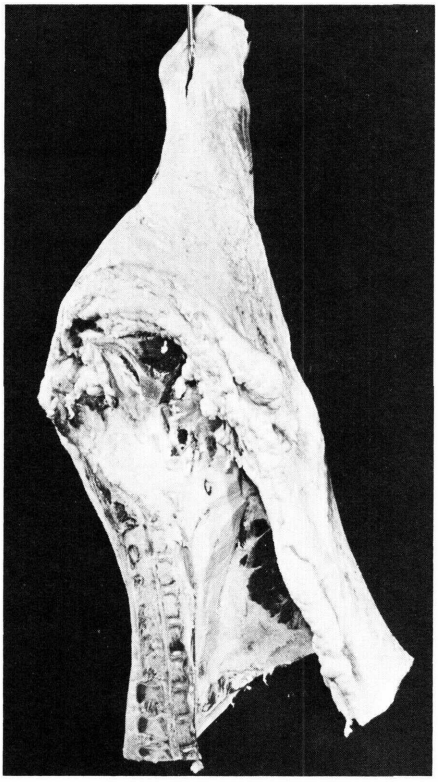
PN–4645

Figure 97.—Rib steaks and roasts.



PN–4646

Figure 98.—Sawing shortribs from shortplate.



PN–4647

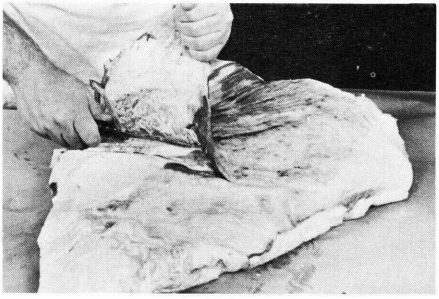
Figure 99.—Hindquarter.

PN–4648

Figure 100.—Removing the flank.

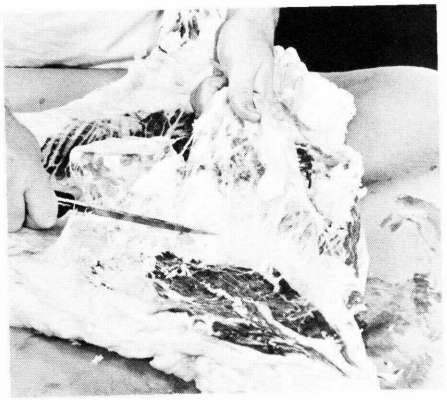
should be laid on the table with the split surface of the backbone down. Starting at the smaller end of the hindquarter, the club, T-bone, porterhouse, and sirloin steaks are removed by cross-sectional cuts with knife and saw (fig. 111). The last sirloin steak is determined by the cut that passes through the hip joint (fig. 112).

The beef round is turned over with the skinned side down (fig. 113). The rump is removed by a cut made approximately parallel to the long axis of the split pelvic bone and about 1 inch towards



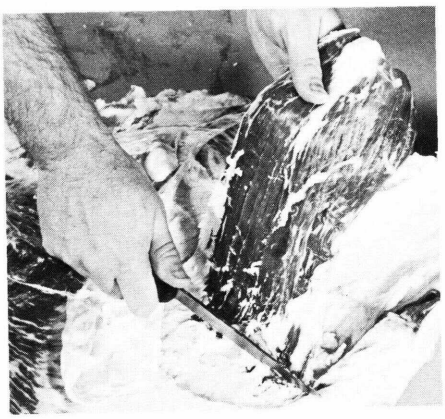
PN–4649

Figure 101.—Removing outside lean muscle from flank.



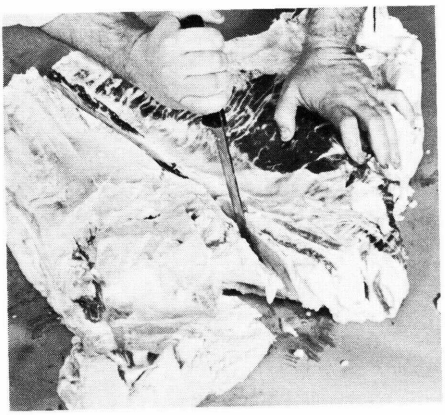
PN–4650

Figure 102.—Lifting membrane from flank steak.



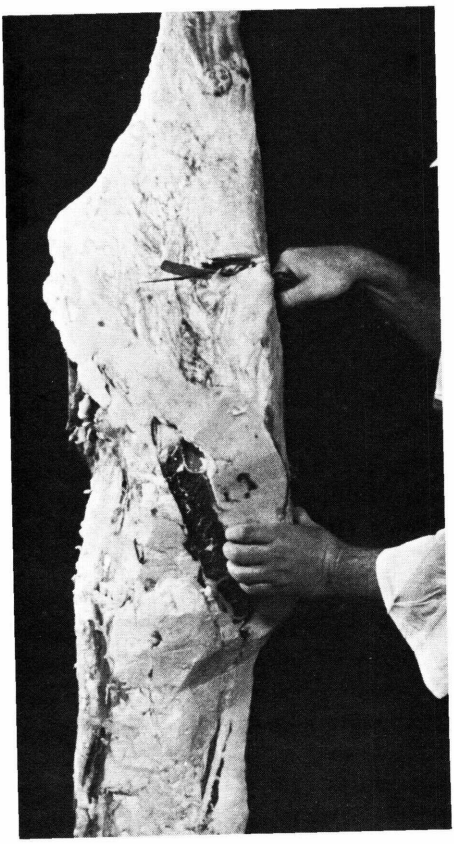
PN–4651

Figure 103.—Removing flank steak.



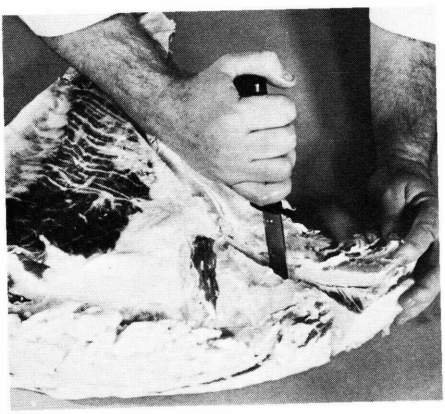
PN–4652

Figure 104.—Removing the cod or udder fat.



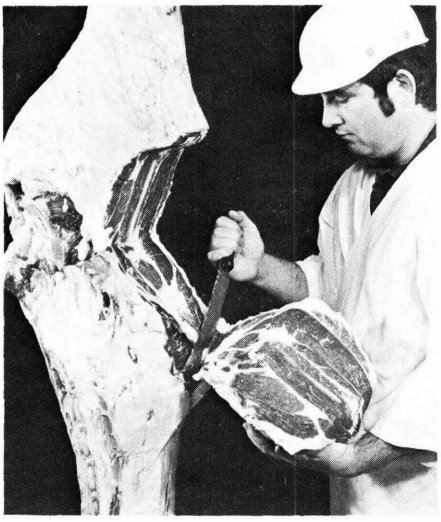
PN–4654

Figure 106.—Cutting below kneecap.



PN–4653

Figure 105.—Removing the 13th rib.



PN-4655

Figure 107.—Removing sirloin tip or knuckle.

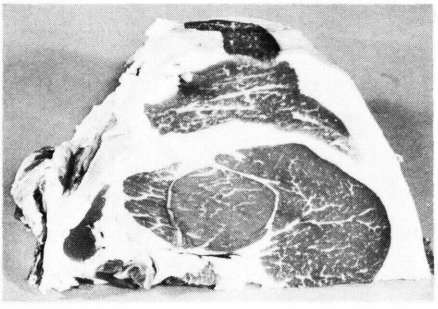
the hindleg from the innermost curve of this bone (fig. 114). The tail bone is removed by cutting along its edge (fig. 115). The hip joint is removed from the rump by a saw cut just below and close to the pelvic bone (fig. 116). The saw should be held *parallel* to the outer skinned surface of the rump. The trimmed rump roast may be divided by first sawing through the pelvic bone and then cutting through the lean to make two approximately equal roasts (fig. 117).

To fabricate the round, make a knife cut parallel to the surface where the rump was removed and across the round just in front of the knee cap. Saw through the round bone to separate the heel and shank from the round (fig. 118). Remove the round bone from the round (fig. 119). Separate the top and bottom parts of the round by starting at the surface where the rump was removed and cutting along the fat seam across the center of the round (fig. 120). Slice the top round into steaks or roasts (fig. 121). Top round steaks and roasts from young well marbled beef may be broiled or oven roasted. Muscles of the bottom round are less tender than those of the top round and should be cooked with moist heat for longer period of time (fig. 122).

The heel of round or "Pike's Peak" roast is removed by cutting just in front of the major tendon at the hock straight across until you reach the shank bone. Then cut along the shank bone and around the knee or stifle joint to remove the heel of round roast (figs. 123 and 124).

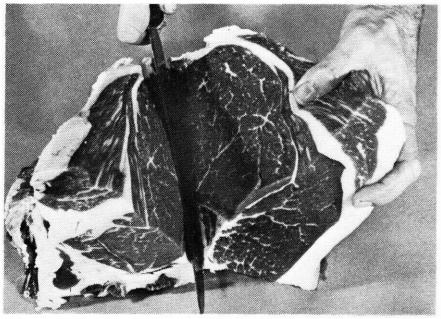
Sawing through the knee joint to expose the bone marrow will add flavor to soups or stews (fig. 125).

Meat trimmed from roasts and steaks, the neck portion, parts of the plate not made into short ribs, the flank, and the shanks



PN-4656

Figure 108.—Sirloin tip.



PN–4657

Figure 109.—Separating sirloin tip into roasts.

may be made into stew meat and ground beef.

The neck bones, the "deckle," shoulder, elbow, hip, and knee joints add flavor to soups and stews especially if the joints are split to expose the bone marrow.

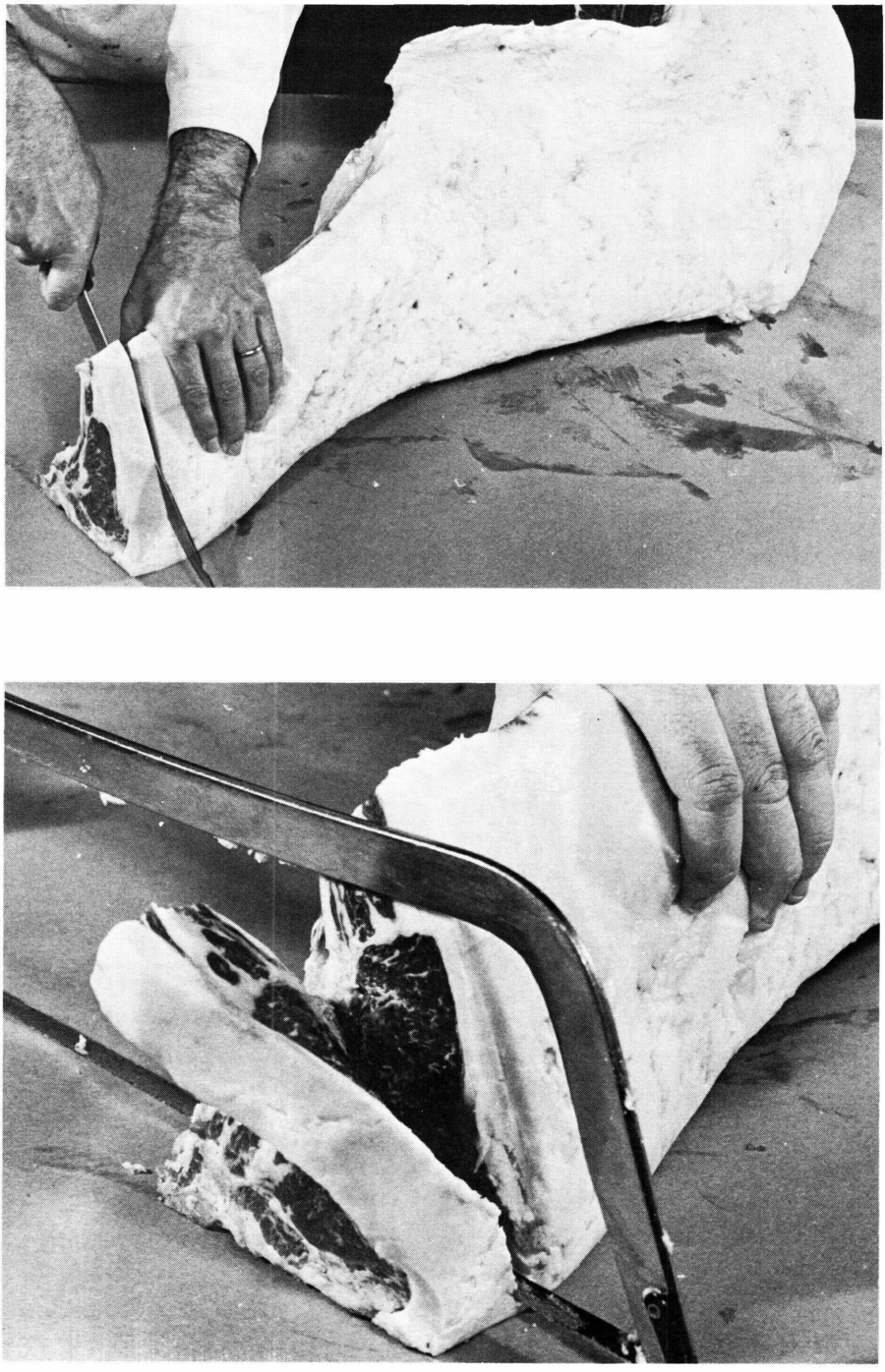
Wrapping

Immediately after chilling and cutting, meat *must be* properly wrapped, quickly frozen, and stored at O°F or lower until needed. Proper wrapping is essential to maintain meat quality. Therefore, one should:

- Use moisture-vapor proof wrap such as heavily waxed freezer paper or specially laminated paper.
- Wrap meat closely eliminating as much air as possible. Improper wrapping will allow air to enter and cause "freezer burn" and rancidity.
- Use a proper wrapping procedure (fig. 126).
- Label packages as to content and date.

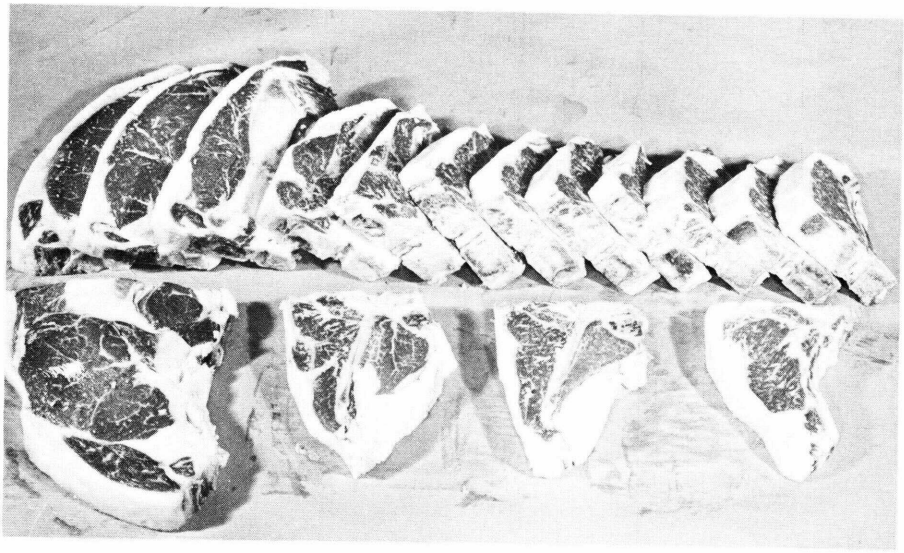
PN–4658

Figure 110.—Sirloin tip—steaks or roasts.



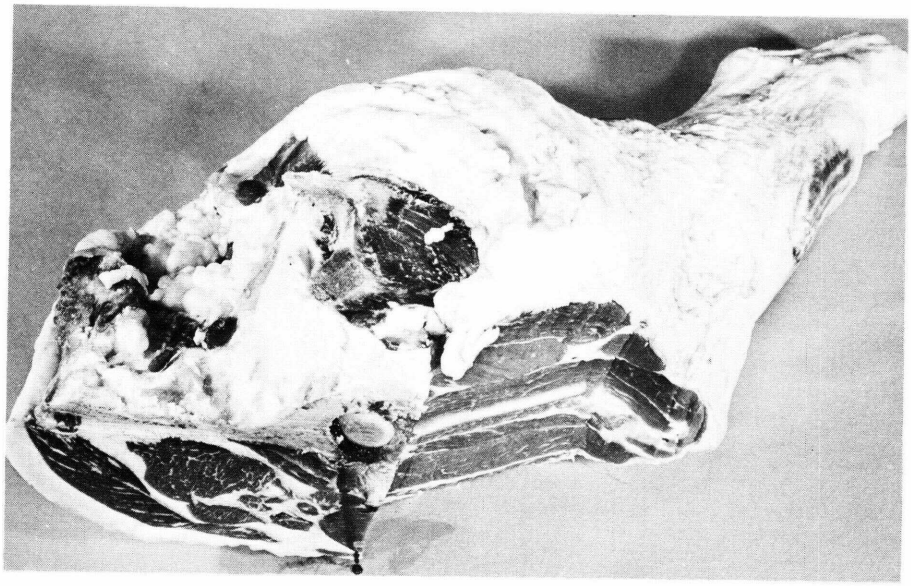
PN–4659
PN–4660

Figure 111.—Removing club steak from loin.



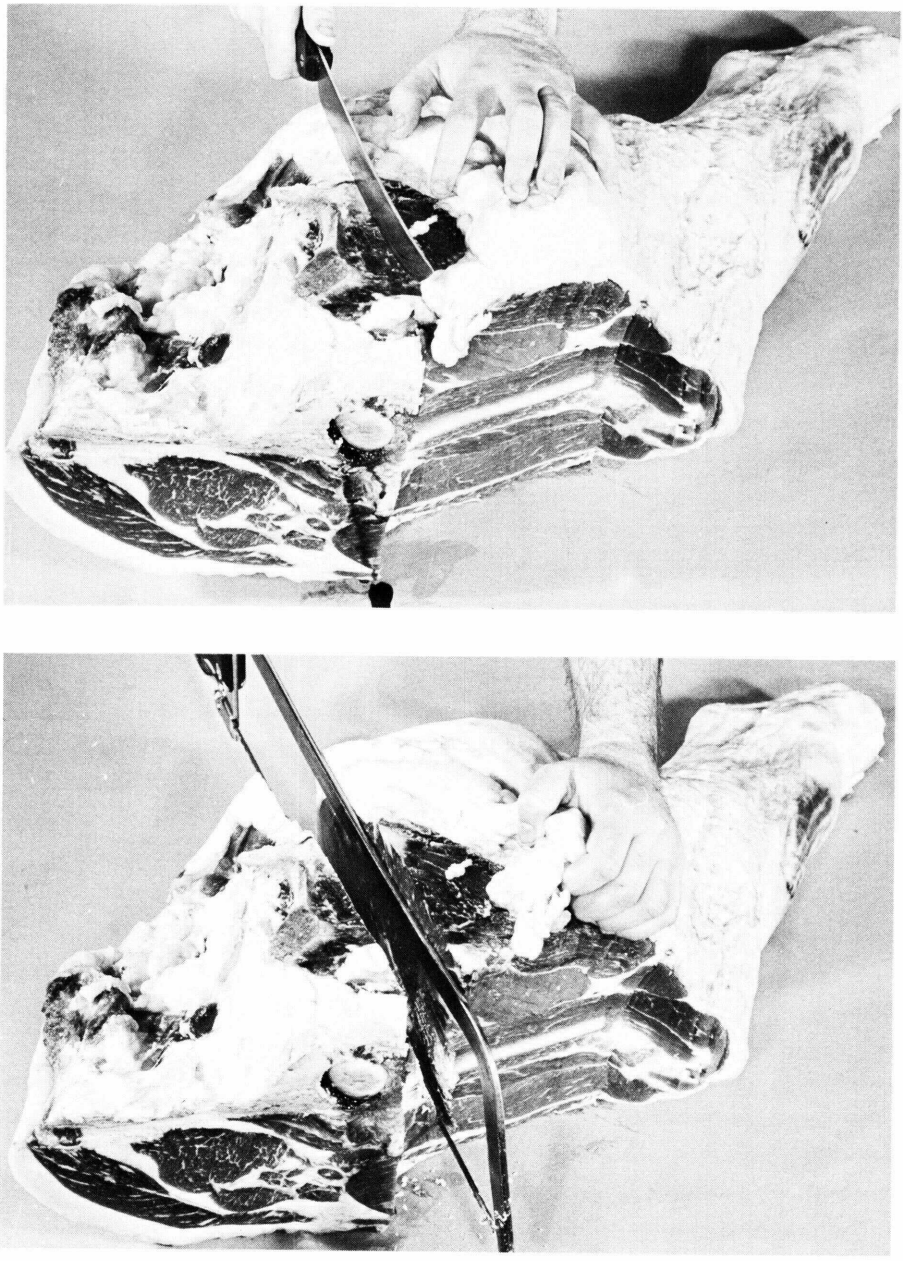
PN-4661

Figure 112.—Sirloin, porterhouse, T-bone and club steaks from loin.



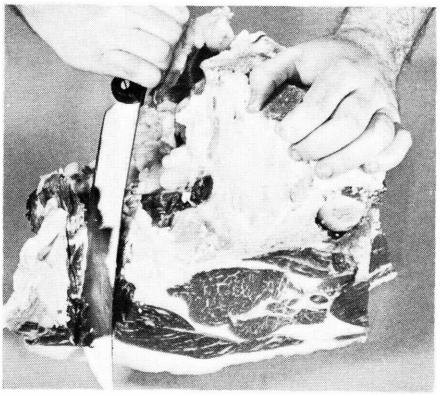
PN-4662

Figure 113.—Beef round (sirloin tip removed).



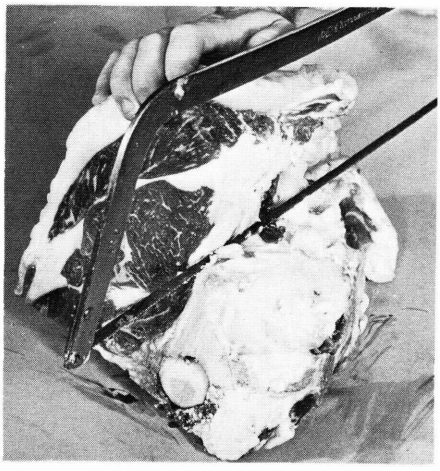
PN–4663
PN–4664

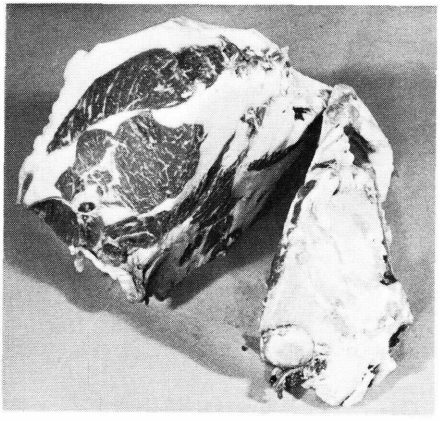
Figure 114.—Removing the rump.



PN–4665

Figure 115.—Removing the tail bone.





PN–4666
PN–4667

Figure 116.—Removing the hip joint.

FREEZING AND FROZEN STORAGE

For large quantities of meat, it is best to use a commercial establishment for quick freezing. A home freezer may be used if it will maintain a temperature of O°F or below. When using the home freezer, be sure to:

- Clean and defrost freezer.
- Freeze meat at −10°F or below.
- Freeze only the amount of meat that will freeze in 24 hours.
- Allow ample air circulation by not overpacking the freezer. Approximately 2 to 3 pounds of meat may be packed per cubic foot of freezer space.

FURTHER PROCESSING

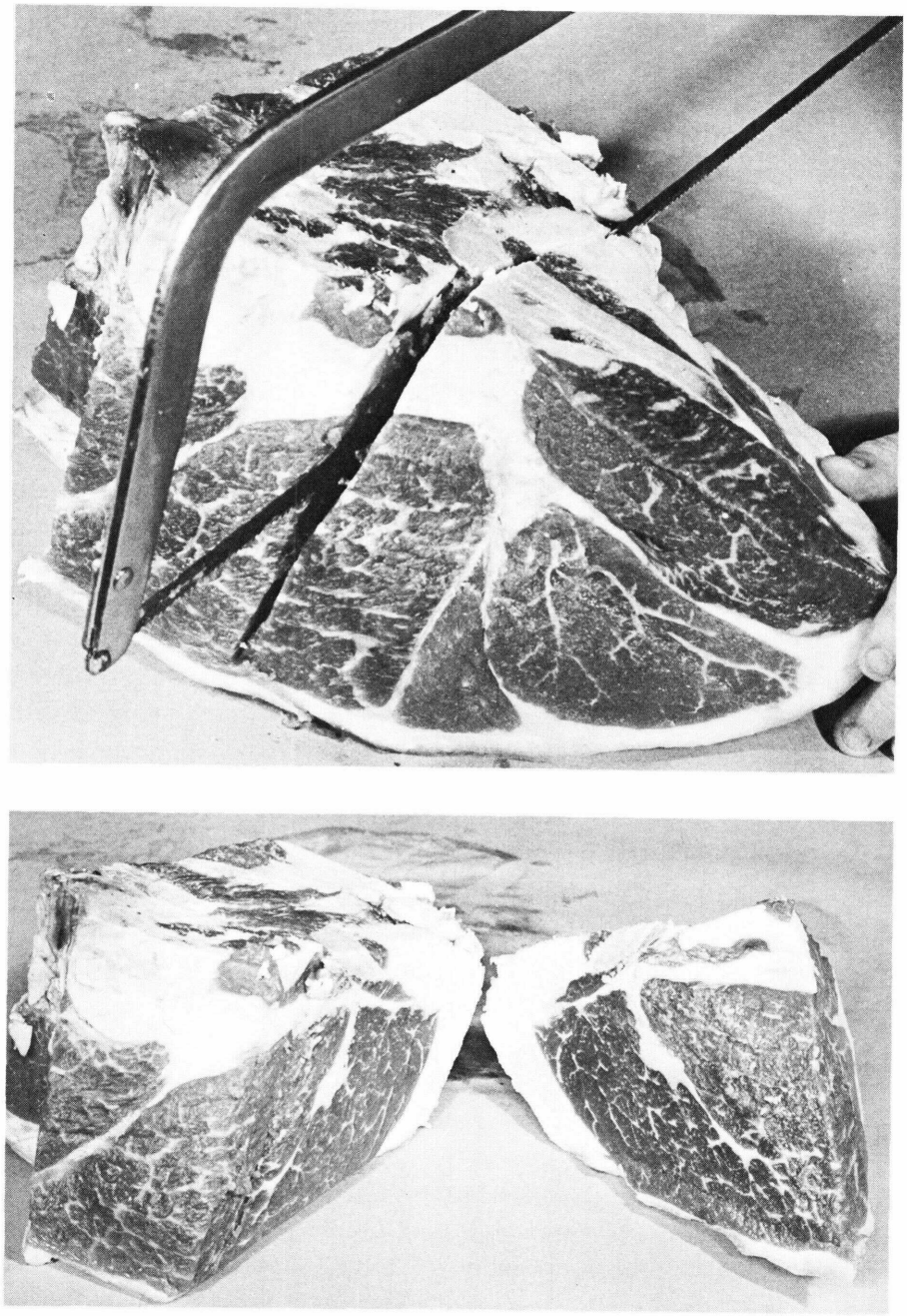
Curing

The curing process enhances meat flavor and improves shelf life by retarding bacterial growth. Salt and nitrites inhibit bacterial growth and enhance flavor and color; sugar counteracts the hardening effect of salt and also enhances flavor. Beef is generally cured by making corned beef or dried beef using the above-mentioned ingredients.

Corned Beef

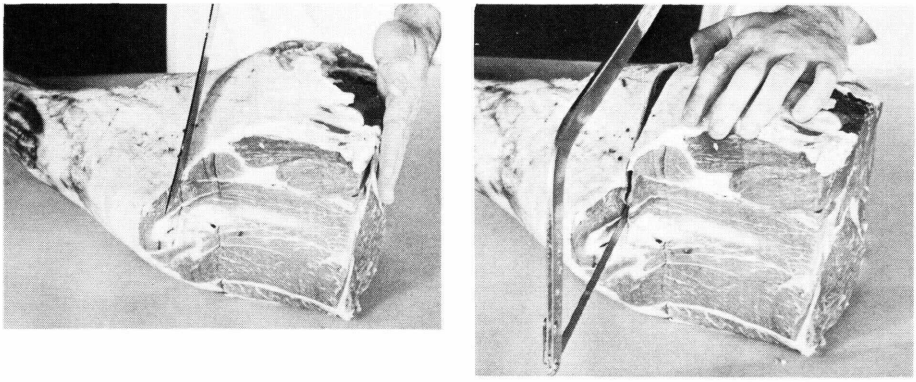
Corned beef is generally made from cuts of the round, brisket, plate, or chuck.

Remove all bone from the cuts and slice pieces into uniform thickness and size (approximately 3 inches thick). To prepare



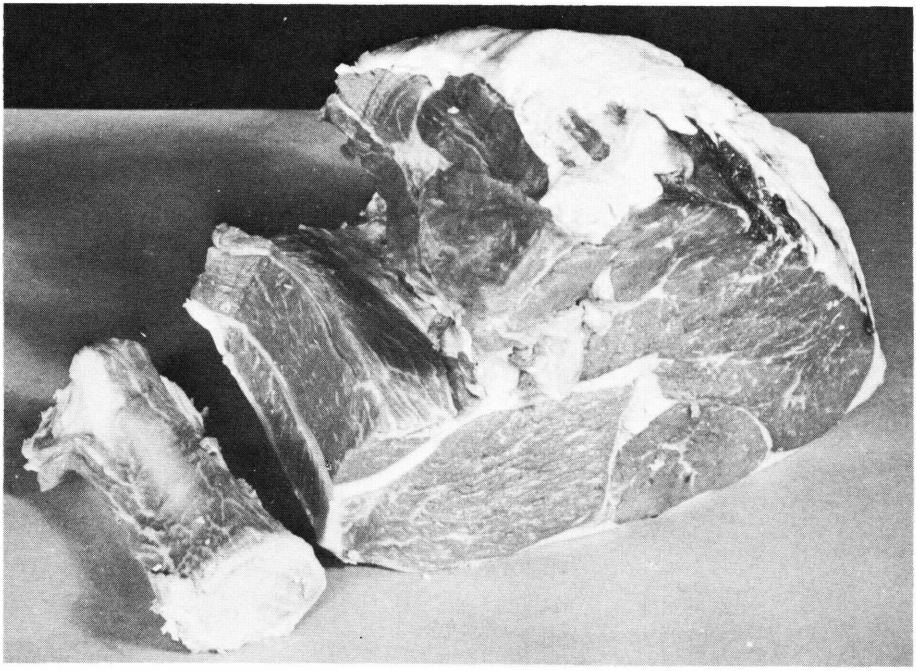
PN–4668
PN–4669

Figure 117.—Dividing rump into roasts.



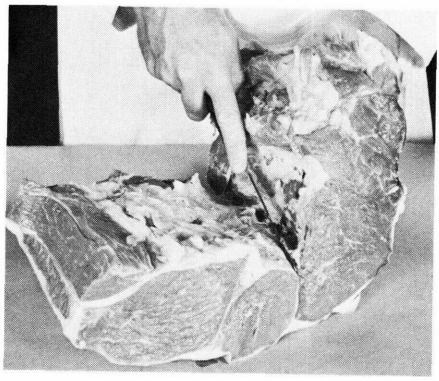
PN–4670
PN–4671

Figure 118.—Separating heel and shank from round.



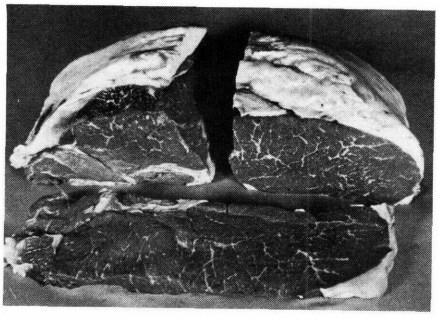
PN–4672

Figure 119.—Removing round bone.



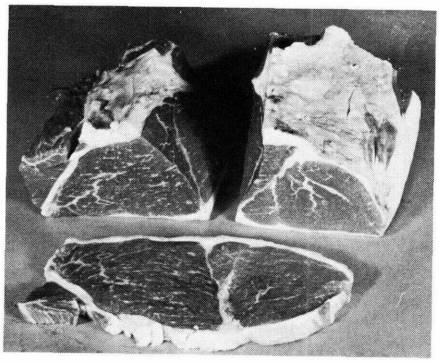
PN–4673

Figure 120.—Separating top and bottom round.



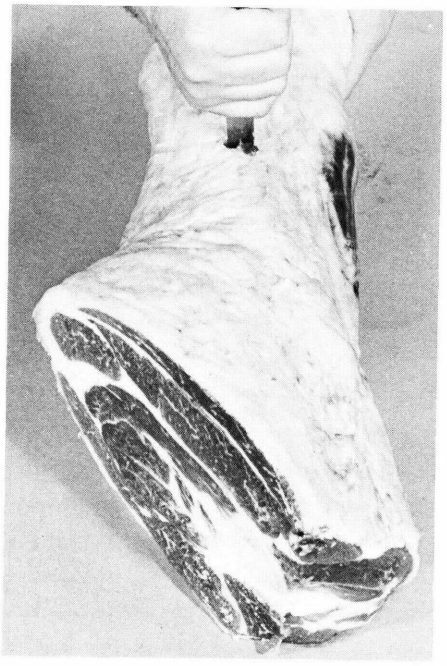
PN–4674

Figure 121.—Top round steak and roasts.



PN–4675

Figure 122.—Bottom round steak and roasts.



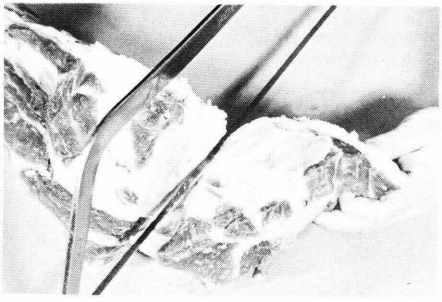
PN–4676
PN–4677

Figure 123.—Removing heel of round roast.

PN–4678

Figure 124.—Heel of round and hindshank.

the pickle dissolve 8 pounds of salt, 3 pounds of sugar, 4 ounces of baking soda and 4 ounces of saltpeter in 4 gallons of water. This will cure 100 pounds of beef. Pack meat in a clean stone crock or stainless steel tub, and cover it with the pickle. If cuts have not been rolled and are approximately 3 inches in thickness, they will be ready to use in 2 weeks. Thicker cuts will require longer curing. After curing, remove meat from the pickle; wash and dry or smoke.



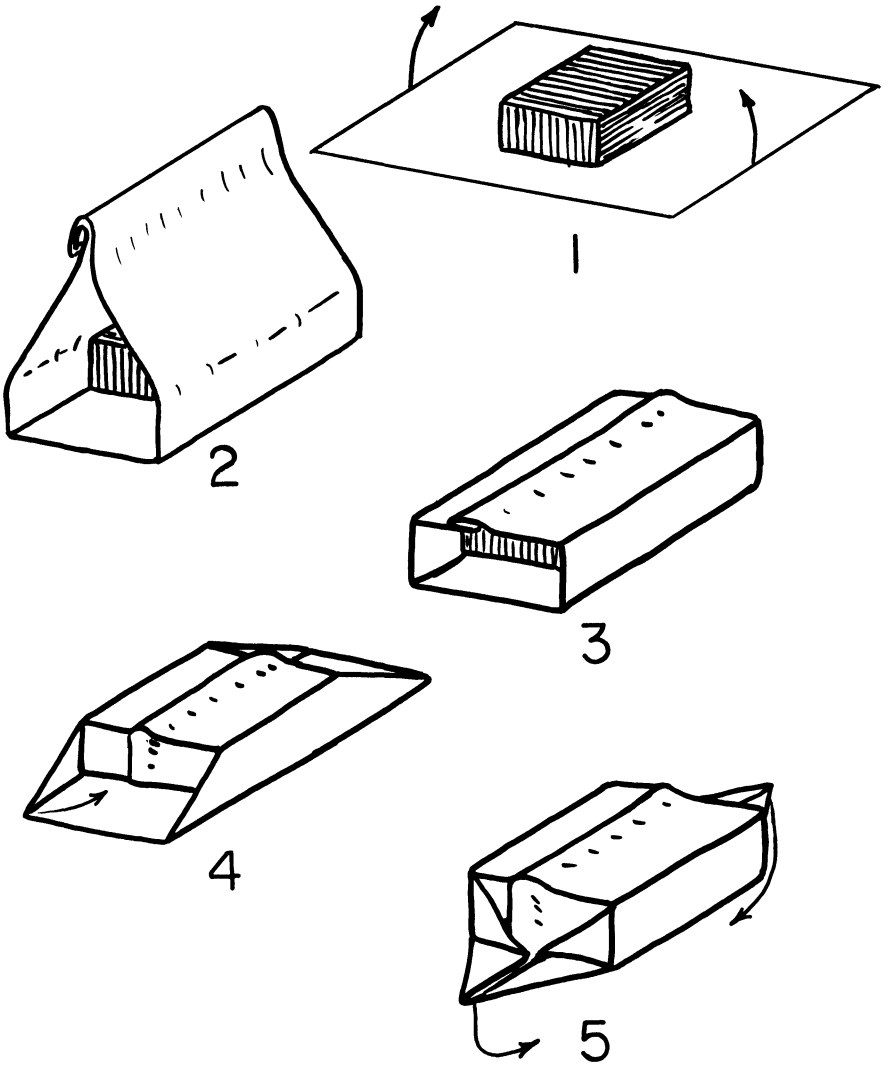
PN–4679

Figure 125.—Sawing through knee joint.

During curing the temperature of the pickle should remain below 38° to 40°F, otherwise the brine may become ropy due to growth of bacteria. Ropiness looks like partially cooked egg white. If ropiness occurs, the meat should be removed, washed, and repacked in a clean container.

Dried Beef

Dried beef is made from the defatted round separated into the



PN-4680

Figure 126.—Wrapping procedure.

top round, bottom round with eye muscle, and sirloin tip. For each 100 pounds of meat use 8 pounds of salt, 3 pounds of sugar, and 4 ounces of saltpeter.

The curing process is the same as that for corned beef. After curing remove meat from the brine, wash, and hang up to dry for 24 hours. After drying, smoke at 130° to 140°F for 70 to 80 hours or until the meat is very dry. The meat should then be stored in a dry, well-ventilated room that is protected from insects and rodents.

Smoking gives the meat a more desirable color and flavor and probably aids in its preservation. The wood used to generate the smoke should be non-resinous, such as hickory, apple, plum, oak, beech, or ash. The same smokehouse procedures used for curing pork work well for beef.[7]

Canning

Beef can be satisfactorily preserved by canning if the proper procedures are used. Meat is a low-acid, high-protein food that allows for good bacterial growth. The use of a pressure canner is vital when canning meat. Sterilization temperature should be held at 240°F for the proper length of time. A water bath or a steamer is *not recommended* since neither results in a sufficiently high temperature to produce effective sterilization. Meat may be canned soon after chilling since aging has little effect on the flavor and tenderness of canned meats. For complete canning procedures see Home and Garden Bulletin No. 106, "Home Canning of Meat and Poultry."

Ground Beef

All lean trim can be ground as ground beef. Palatable ground beef should have from 15 to 30 percent fat. Most retail ground beef ranges from 20 to 25 percent fat.

MEAT COOKERY

Tender cuts of meat are best cooked with dry heat, as by broiling, roasting, or panbroiling. Less tender cuts of meat are tenderized by cooking with moist heat. Connective tissue is softened and tenderized by cooking slowly in moisture.

Temperature control is very important in meat cookery. Meat loses moisture, fat, and other substances during cooking. However, some of the meat juices and fat may be retained in pan drippings.

Cooking losses can be minimized by controlling the oven temperature and final internal temperature of the meat. Shrinkage is increased when higher oven temperatures are used for cooking and when meat is cooked to a higher internal temperature.

The meat thermometer is the most accurate guide to the degree of doneness of meat. Cooking time

[7] For further information on smoking see Farmers Bulletin No. 2138, "Pork Slaughtering, Cutting, Preserving, and Cooking on the Farm."

can be used as a guide to the degree of doneness, but cooking time is affected by fat and moisture content and shape or size of the cut.

Types of Meat Cookery

Broiling

Broiling is recommended for tender steaks from the loin and rib and for ground meat patties. Blade steaks from the chuck may also be broiled if from a high-quality carcass (U.S. Choice or higher). For best results:

1. Set oven for broiling.
2. Place meat on rack of broiler pan set at the distance from the heat recommended by the oven manufacturer.
3. Broil the steak or patties for approximately one-half the desired time before turning. One-inch steaks will require 15 to 30 minutes; 2-inch steaks, 35 to 55 minutes; and ¾-inch patties, 8 to 14 minutes.
4. Season, if desired, and serve at once.

Pan broiling

The same tender cuts suitable for broiling may also be pan broiled if they are 1 inch or less in thickness. For best results:

1. Place meat in hot frying pan or on a griddle.
2. Do not add fat or water.
3. Cook slowly over moderate heat, turning occasionally.
4. Pour off or remove fat as it accumulates.
5. Brown meat on both sides.
6. Avoid overcooking. The total cooking time required for pan broiling is about 10 to 20 minutes for 1-inch steaks.

Pan frying

When fat is added or allowed to accumulate during cooking, the method is called pan frying. Tender cuts that are 1 inch thick or less are usually cooked by this method.

Braising

This method is best suited to less tender cuts such as round or chuck steak, flank steak, pot roast, stew beef, and shortribs. For best results:

1. If desired, brown meat slowly on all sides with enough fat to keep meat from sticking. Use a heavy pan.
2. Season with salt, pepper, herbs, and spices if desired.
3. Add a small amount of liquid (½ cup or less).
4. Cover tightly.
5. Cook slowly over low heat on top of range or in a 350° (moderate) oven. Steaks will take 1 to 2 hours and pot roasts (3 to 5 pounds) will take 3 to 4 hours.

Roasting

This method is recommended for large, tender cuts. Some beef cuts suitable for roasting are rib roast, sirloin top roast (USDA Choice or better), ribeye roast (delmonico), and boneless rolled rump roast (USDA Choice or better). For best results:

1. Season with salt and pepper, if desired.

2. Place meat, fat up, on rack in *open* shallow roasting pan.

3. Insert a meat thermometer so the bulb is in the center of the largest muscle.

4. Add no water and do not cover.

5. Roast at oven temperature of 325° to desired internal temperature (see table below).

Cooking Variety Meats

Variety meats include liver, brains, heart, kidneys, sweetbreads, and tongue. Variety meats are very perishable and should be frozen or cooked as soon as possible.

Liver

Beef liver is usually braised or fried. Calf liver is frequently broiled, pan broiled, or pan fried. The outer memberane (skin) may be removed from liver before cooking.

Brains

Brains are soft and very tender and have a delicate flavor. They may be broiled, fried, braised, or cooked in liquid.

Timetable for roasting beef [1]

Cut of meat	Approximate ready-to-cook weight	Approximate roasting time at 325° F[2]	Internal temperature of meat when done	
	Pounds	*Hours*	*°F*	*°C*
Beef				
Standing ribs [3]				
Rare	4 to 6	2¼ to 2½	140	60
Medium	4 to 6	2½ to 3⅓	160	70
Well done	4 to 6	2¾ to 4	170	75
Rare	6 to 8	2½ to 3	140	60
Medium	6 to 8	3 to 3½	160	70
Well done	6 to 8	3½ to 4¼	170	75
Rolled rib				
Rare	5 to 7	2⅔ to 3¾	140	60
Medium	5 to 7	3¼ to 4½	160	70
Well done	5 to 7	4 to 5⅔	170	75
Rolled rump (choice grade)	4 to 6	2 to 2½	150 to 170	65 to 75
Sirloin tip (choice grade)	3½ to 4	2⅓	140 to 170	60 to 75
	6 to 8	3½ to 4	140 to 170	60 to 75

[1] Source: Adapted from Home and Garden Bulletin No. 118, "Beef and Veal in Family Meals."

[2] Meat at refrigerator temperature at start of roasting.

[3] Eight-inch cut. For 10-inch ribs allow about 30 minutes less time.

Heart

Heart is flavorful but not very tender. Braising or cooking in liquid is recommended.

Kidneys

Beef kidneys should be cooked in liquid or braised. Before cooking, remove membrane and hard parts. Slice or cut kidney in pieces, if desired.

Sweetbreads

Sweetbreads are the two lobes of the thymus gland located in the neck and are a tender meat. Veal, calf, and young beef furnish nearly all of the sweetbreads. As the animal matures, the thymus gland disappears. Sweetbreads may be broiled, fried, braised, or cooked in liquid.

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